UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE -- REGION SIX

MT. BAKER - SNOQUALMIE NATIONAL FOREST

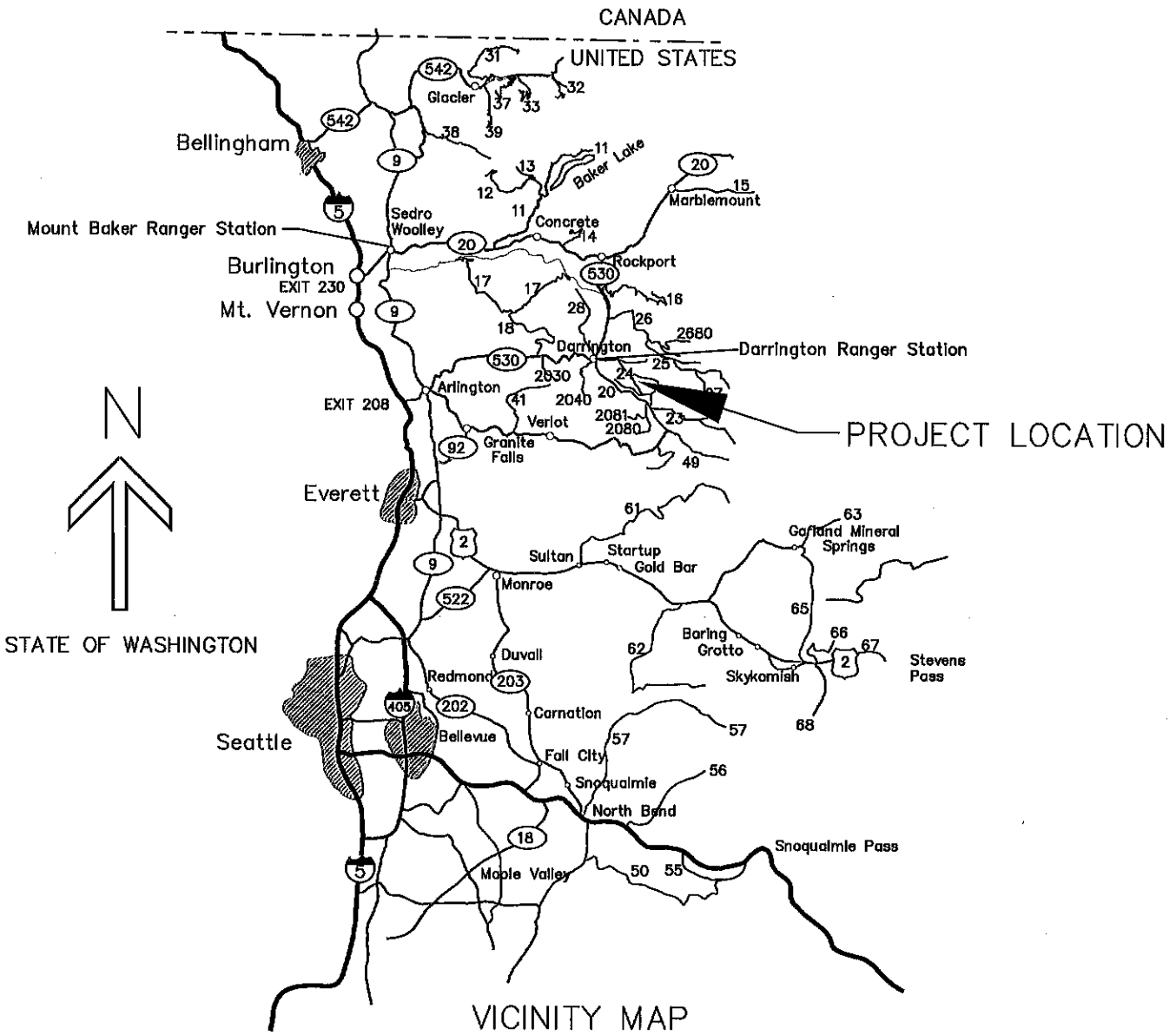
DARRINGTON RANGER DISTRICT

SPECIFIED ROAD WORK DRAWINGS FOR PROPOSED

DAN THIN RE-OFFER 2 TIMBER SALE

ROAD 2420, MILEPOST 0.00 TO 3.90 (RECONSTRUCTION)

INDEX TO SHEETS

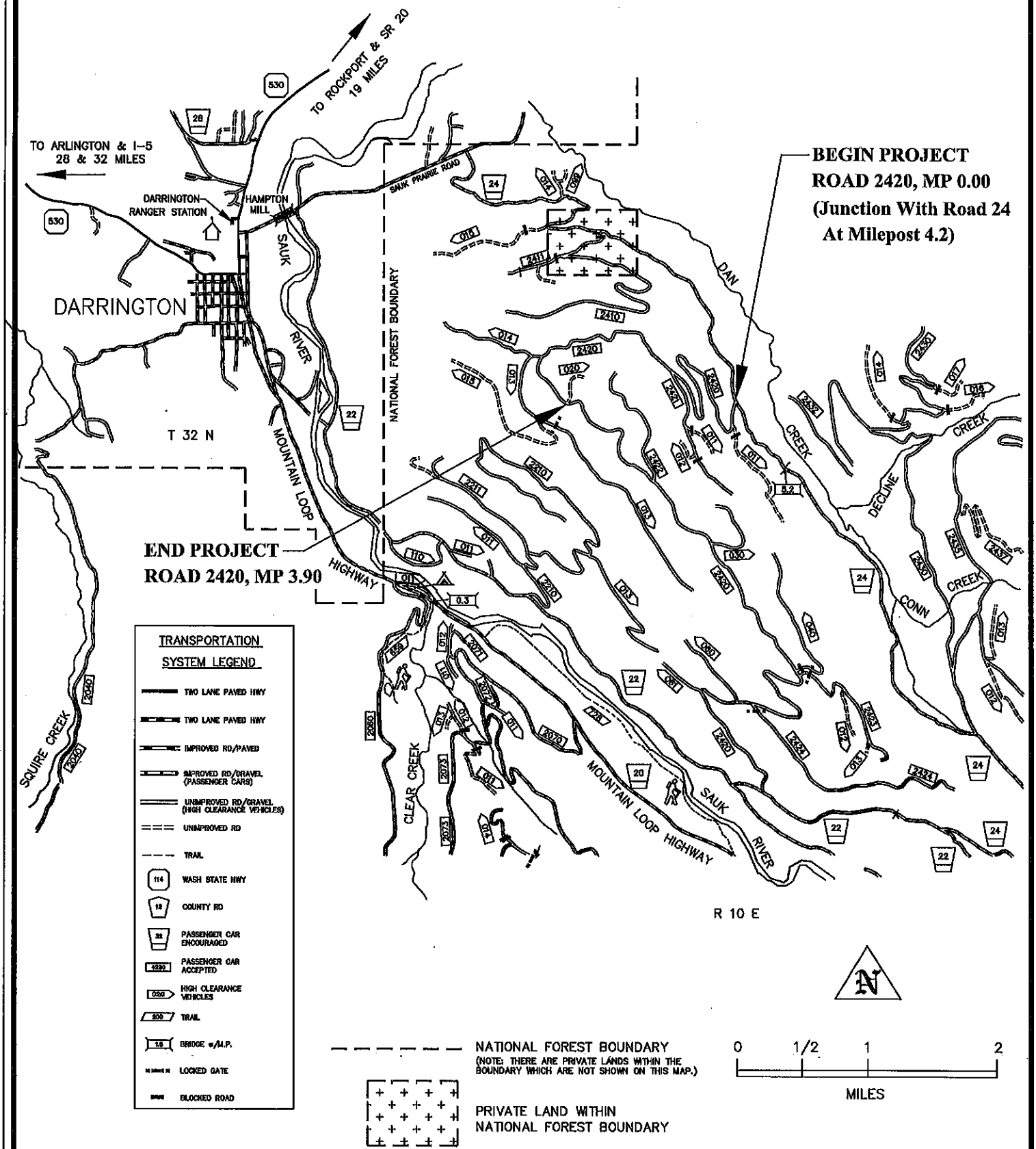


PREPARED BY:	RECOMMENDED BY:
NAME DESIGN ENGINEER DATE	NAME ASSISTANT FOREST ENG. DATE
REVIEWED BY:	APPROVED BY:
NAME PROJECT TEAM LEADER DATE	NAME DISTRICT RANGER DATE

SHEET	TOTAL SHEETS
2	18

DAN THIN RE-OFFER 2 TIMBER SALE

SPECIFIED ROAD LOCATION MAP



SUMMARY OF QUANTITIES

DAN THIN RE-OFFER 2 TIMBER SALE
Darrington Ranger District
Mount Baker-Snoqualmie National Forest
Washington State, Snohomish County

PROJECT: Road 2420 (Milepost 0.00 to 3.90)

	ITEM NO.	DESCRIPTION	PAY UNIT	EST. QTY.
	15101	Mobilization	Lump Sum	1
	20301A	Removal of culvert	Each	16
	20301B	Removal of culvert piece (milepost 1.28)	Each	1
	20356	Removal of culvert end by cutting or beveling	Each	2
	20419	Drainage excavation, type: Outlet/Lead-off ditch	Foot	25
	20950	Pipe bedding	Ton	246
	23050	Roadside Brushing	Mile	3.90
	25101A	Placed riprap, class 4 (Commercial Source)	Ton	111
	25101B	Placed riprap, class 7 (Commercial Source)	Ton	18
	30322	Road reconditioning, compaction method A	Mile	3.90
	32201	Aggregate base, grading equal to the Washington State DOT mix 1-1/4" minus, dense graded, compaction method A (Commercial Source)	Ton	559
	60209	Pipe Elbow (for 18" & 24" outlet pipe)	Each	15
	60273	Anchor assembly for polyethylene pipe	Each	9
	60275A	18-Inch high density polyethylene outlet pipe with smooth interior and annular exterior	Foot	170
	60275B	24-Inch high density polyethylene outlet pipe with smooth interior and annular exterior	Foot	70
	60275A	18-Inch high density polyethylene pipe with smooth interior and annular exterior, compaction method B	Foot	782
	60275B	24-Inch high density polyethylene pipe with smooth interior and annular exterior, compaction method B	Foot	340
	60710	Recondition drainage structure, repair culvert inlet end (bevel cut)	Each	2
*	62501	Seeding, dry method (with weed free straw mulch)	Acre	0.30

* Denotes a Contract Quantity

GENERAL NOTES

1. Item 15101, Mobilization – All construction signing, traffic control, and cleaning of equipment is an indirect cost to Mobilization. Equipment shall be washed, cleaned, and inspected by the Forest Service Engineering Representative prior to accessing the project.

2. Item 20301A, & B, Removal of culvert – Culverts removed shall become the property of the Contractor and removed from Government Lands. The Contractor shall provide written proof that the culverts were disposed of at a certified recycling business or stored at the Contractor's storage yard for personal use.

3. Item 20356, Removal of culvert end by cutting or beveling – See Note #2 above for disposal of the culvert pieces removed.

4. Item 20419, Drainage excavation, type lead-off- ditch. See the Work Description List for location and the Drainage Construction Details on the Plans.

5. Item 20950, Pipe bedding – Bedding material for culvert installations shall be obtained from a Commercial Source or from the existing roadway surfacing which is conserved prior to excavation. If obtained from a Commercial Source, it shall meet the requirements of Item 32201 (Aggregate Base) and shall be approved by the Forest Service Engineering Representative. Some jobsite generated material may be suitable for bedding, but only if it is approved in advance by the Forest Service Engineering Representative.

6. Item 23050, Roadside brushing – This work consists of cutting and disposal of the existing roadway vegetation on all roads. Clearing limits and requirements are shown on the "Typical Roadway Section" on the Plans, Sheet 15.

7. Items 25101A & B - Placed riprap, class 4, & 7 – Riprap shall be obtain from a Commercial Source and shall be approved, in writing, by the Forest Service Engineering Representative. Jobsite generated material meeting the requirements may be utilized, but only it is approved in advance by the Forest Service Engineering Representative.

8. Item 30322, Road Reconditioning –This work consists of grading, shaping, and compacting the roadway, grading, cleaning and shaping all ditches , cleaning all culvert inlets and outlets. See the Road Reconditioning Details on the Plans. Compaction A is required (with hauling equipment).

9. Item 32201, Aggregate Base – The aggregate shall be obtained from a Commercial Source. It shall meet the requirements equal to the Washington State DOT mix 1-1/4" minus, dense graded. Material Certification, Testing Reports, and Gradation Report shall be submitted to the Forest Service Engineering Representative for approval prior to delivery to the project. Quantities are measured by the Ton. Load and weight tickets shall be submitted to the Forest Service Representative for verification of quantities. Compaction Method A (hauling equipment) requires achieving the adequate moisture content, layer placing, and compacting with hauling and spreading equipment until visual displacement ceases. All work associated with obtaining, hauling, placing, processing, and compaction are an indirect cost to Item 32201.

10. Item 60209, Pipe elbow - This work consists of cutting and installing the culvert elbow for 18" and 24" polyethylene outlet pipes. See the Drainage Construction Details on the Plans for installation details.

11. Item 60273, Anchor assemblies for polyethylene pipe - This work consists of cutting and installing the steel anchor posts and wire for polyethylene outlet pipe. See the Drainage Construction Details on the Plans for materials and installation details.

12. Items 60274A, & B - 18" & 24" corrugated polyethylene outlet pipe - This work consists of furnishing and installing the culvert outlet pipes. See the Drainage Construction Details on the Plans for installation details.

13. Items 60275A & B – 18" & 24" corrugated polyethylene pipe, compaction method B - This work consists of furnishing and installing the culvert pipes. See the Drainage Construction Details on the Plans for installation details.

GENERAL NOTES

14. Item 60710, Recondition drainage structure, repair culvert inlet end - This work consists of repairing the inlet end of existing culverts or bevel cutting the inlet ends.

15. Item 62501, Seeding, dry method (with straw mulch) – This work consists of seeding and mulching all constructed fillslopes, cutslopes, and all disturbed soil areas beyond the traveled way and all disturbed soil areas for culvert installations. See the Supplemental Project Specifications for seed and mulch (weed free straw) requirements, application, and timing.

16. Traffic Control & Signing – See the Supplemental Project Specifications for signing requirements and standard Contractor furnished signs. For construction work to be done on Road #2420 from Milepost 0.00 to 3.90 a Traffic Control Plan shall be submitted to Forest Service Engineering Representative, for approval, **7 days** prior to commencing work. All traffic control and signing is an indirect cost to Item 15101, Mobilization.
Note: The following signs shall be installed 100' up Road #2420 beyond the Junction with Road #24 and 100' up Road #2420 beyond the Junction with Road #22 The signs shall meet the current MUTCD Standards, mounted on a 4"x 4" x 10' post, and meet the following requirements: The sign shall read:

ROAD CONSTRUCTION **FOR 4 MILES AHEAD** **EXPECT DELAYS UP TO 60 MINUTES** (Date) **TO** (Date)	Sign on a 48"x 36" panel Orange reflectorized with 3" high black letters	at junction with Road #24
ROAD CONSTRUCTION **BEGINNING 5 MILES AHEAD** **EXPECT DELAYS UP TO 60 MINUTES** (Date) **TO** (Date)	Sign on a 48"x 36" panel Orange reflectorized with 3" high black letters	at junction with Road #22

17. **Timing of Drainage Work in live streams** – All work in live streams shall be done under the provisions of the **2005 WSDW-USFS MOU** (Washington State Department of Fish & Wildlife – US Forest Service Memorandum of Understanding). A copy of the **MOU** Applicable documents in the Contract Documents shall be readily available on the jobsite at all times.

18. **Site Dewatering** – All culvert installation work shall be done in the dry. The Contractor shall dewater all culvert trenches by pumping, temporary bypass culvert, or ditching. The site dewatering work is an indirect cost to the culvert installation.

Dan Thin Re-Offer 2 Timber Sale
WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 To be staked by the F.S. Engineering Representative

Mile Post	*Item*	*Description*	* Contract Quantity *Units*	*Estimated Quantity*
0.00	**Begin Project** (Junction With Road #24 at MP 4.42)			
0.00 to 3.90	23050	Begin Roadside Brushing	Mile	3.90
0.00 to 3.90	30322	Begin Road Reconditioning	Mile	3.90
0.00 to 3.90	62501	Begin Seeding & Mulching (seed all disturbed soil areas outside roadway)	*Acre	0.30
0.00 to 3.90	32201	Begin Placing 6" depth of Crushed Aggregate on the roadway in locations	Ton	180
		as staked by the F.S. Engineering Representative.		
0.06	20301A	Remove existing 15" culvert	Each	1
	25101B	Place Class 7 Riprap to fill in outlet fillslope cavity	Ton	12
	60275B	Install 24"x 30' Corrugated Polyethylene Pipe (same skew & gradient)	Foot	30
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 2 tons Class 4 Riprap for inlet headwall/ditchdam	Ton	2
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.10	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (skew 80° & gradient -5%)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
0.16	20301A	Remove existing 18" culvert	Each	1
	60275B	Install 24"x 34' Corrugated Polyethylene Pipe (same skew & gradient)	Foot	34
	20950	Place Culvert Bedding Material	Ton	10
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.23	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (skew 80° & gradient -5%)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
0.28	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (same skew & grade)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
0.30	**Spur Road #2430011 Left**			
0.37	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 80° & gradient -8%)	Foot	36
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.39	**Switchback Right**			
0.42	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 100° & gradient -8%)	Foot	36
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.47	Existing newer 18" Culvert.			
0.53	Existing newer 18" Culvert.			

WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 (Cont.) To be staked by the F.S. Engineering Representative

Mile Post	Item	Description	* Contract Quantity Units	Estimated Quantity
0.63	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	36
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
	20419	Construct 25' long Outlet Ditch	Foot	25
0.66	Existing newer 18" Culvert.			
0.70	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
0.73	Existing newer 18" Culvert.			
0.76	Existing newer 24" Culvert.			
0.82	Existing newer 18" Culvert.			
0.88	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.92	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
0.99	Existing newer 24" Culvert.			
1.06	Existing newer 18" Culvert.			
1.10	Existing newer 24" Culvert.			
1.16	**Switchback Left**			
1.19	Existing newer 24" Culvert.			
1.24	Existing newer 24" Culvert.			
1.28	Existing newer 24" Culvert (needs outlet pipe).			
	60274B	Install 24" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	25101A	Place Class 4 Riprap (at end of outlet pipe)	Ton	2
	20301B	Remove 4' piece of old culvert laying down fillslope	Each	1
1.33	Existing newer 18" Culvert.			
1.40	Existing newer 18" Culvert.			
1.45	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
	Existing newer 18" Culvert.			

WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 (Cont.) To be staked by the F.S. Engineering Representative

* Contract Quantity

Mile Post	*Item*	*Description*	*Units*	*Estimated Quantity*
1.50	Existing newer 18" Culvert.			
1.55	Existing newer 18" Culvert.			
1.58	Existing newer 24" Culvert.			
1.62-1.64	32201	Place Crushed Aggregate surfacing to level up outsloping roadway as staked	Ton	45
		by the F.S. Engineering Representative for 100'.		
1.64	Existing newer 18" Culvert.			
1.70	Existing new 36" Culvert (need to bevel cut inlet & place riprap headwall).			
	60710	Bevel cut inlet	Each	1
	25101A	Class 4 Riprap (at inlet)	Ton	4
1.72	**Switchback Right**			
1.74	Existing new 36" Culvert (need to bevel cut inlet & place riprap headwall).			
	60710	Bevel cut inlet	Each	1
	25101A	Class 4 Riprap (at inlet)	Ton	4
1.78	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
1.86	Existing newer 18" Culvert.			
1.92	Existing newer 18" Culvert.			
1.96	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 100° & gradient -8%)	Foot	36
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
2.01	Existing newer 18" Culvert.			
2.05-2.16	32201	Place Crushed Aggregate surfacing to level up outsloping roadway as staked	Ton	100
		by the F.S. Engineering Representative for 560'.		
2.10	Existing newer 18" Culvert.			
2.16	Existing newer 24" Culvert.			
2.18	**Old Spur Road #2421 Left.** (has been treated for storage & existing deep cross ditch			
	constructed across the intersection)			
2.19	Existing newer 18" Culvert.			
2.24	Existing newer 18" Culvert.			
2.31	Existing newer 18" Culvert (needs outlet pipe).			
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
2.37	Existing newer 48" Culvert.			
2.43	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
2.44	**Enter old clearcut area at Dan Thin Timber Sale Unit Boundary**			

WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 (Cont.) To be staked by the F.S. Engineering Representative

* Contract Quantity

Mile Post	*Item*	*Description*	*Units*	*Estimated Quantity*
2.52	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
2.63	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	7
2.73	**Switchback Left**			
2.75	**Spur Road 2430013 Left (Temporary Road for Dan Thin Timber Sale)**			
2.77	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
2.80	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	9
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
2.82	60275B	Install 24"x 34' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	34
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	60274B	Install 24" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
2.88	20301A	Remove existing 24" culvert	Each	1
	60275B	Install 24"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	10
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	60274B	Install 24" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
2.94	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	36
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	20
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	7

WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 (Cont.) To be staked by the F.S. Engineering Representative

* Contract Quantity

Mile Post	*Item*	*Description*	*Units*	*Estimated Quantity*
3.02	20301A	Remove existing 18" culvert	Each	1
	60275B	Install 24"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	10
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	60274B	Install 24" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
3.08	20301A	Remove existing 24" culvert	Each	1
	60275B	Install 24"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	10
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	60274B	Install 24" x 10' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
3.14	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	7
3.19	20301A	Remove existing 24" culvert	Each	1
	60275B	Install 24"x 36' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	36
	20950	Place Culvert Bedding Material	Ton	8
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	32201	Place Crushed Aggregate for surface rock replacement	Ton	8
3.28	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 100° & gradient -6%)	Foot	36
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	7
3.28-3.30	32201	Place Crushed Aggregate surfacing to level up outsloping roadway as staked by the F.S. Engineering Representative for 100'.	Ton	35
3.35	60275A	Install 18"x 34' Corrugated Polyethylene Pipe (skew 100° & gradient -5%)	Foot	34
	20950	Place Culvert Bedding Material	Ton	7
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	60274A	Install 18" x 20' Corrugated Polyethylene Outlet Pipe	Foot	10
	60209	Install Pipe Elbow	Each	1
	60273	Install Anchors for outlet pipe	Each	1
	32201	Place Crushed Aggregate for surface rock replacement	Ton	7
3.39	20301A	Remove existing 24" culvert	Each	1
	60275B	Install 24"x 50' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	50
	20950	Place Culvert Bedding Material	Ton	12
	25101A	Place 2 & 3 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	5
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
3.40	**Junction of Rd #2420013 Right to Cell Phone Repeater Tower**			

WORK DESCRIPTION LIST

Rd. #2420 MP 0.00 to 3.90 (Cont.) To be staked by the F.S. Engineering Representative

Mile Post	*Item*	*Description*	* Contract Quantity *Units*	*Estimated Quantity*
3.46	60275A	Install 18"x 36' Corrugated Polyethylene Pipe (skew 100° & gradient -7%)	Foot	36
	20950	Culvert Bedding Material	Ton	8
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement and to fill up and	Ton	15
		level outsloped dipped roadway.		
3.64	**Short Spur Road Right to view point**			
3.80	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 40' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	40
	20950	Place Culvert Bedding Material	Ton	9
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	10
3.86	20301A	Remove existing 18" culvert	Each	1
	60275A	Install 18"x 30' Corrugated Polyethylene Pipe (Same skew & grade)	Foot	30
	20950	Place Culvert Bedding Material	Ton	6
	25101A	Place 1 & 2 tons Class 4 Riprap for inlet headwall/ditchdam & outlet apron	Ton	3
	32201	Place Crushed Aggregate for surface rock replacement	Ton	6
3.89	32201	Place Crushed Aggregate surfacing to level up outsloping roadway.	Ton	15
3.90	**Spur Road 2430020 Left (Temporary Road for Dan Thin Timber Sale)**			
	End of Project Road #2420			
	End Roadside Brushing			
	End Road Reconditioning			

DRAINAGE LISTING

SHEET	TOTAL SHEETS
12	18

PROJECT: DAN THIN RE-OFFER 2 TIMBER SALE ROAD NUMBER: 2420

SEE THE WORK SUMMARY SHEETS FOR WORK DESCRIPTION AT EACH LOCATION. RIDGE DIVIDE

Design		As Built		Allowable Alternates		Installation Details							Remarks
MILE POST	L.F.	MILE POST	L.F.	ALL PIPES SHALL BE PLASTIC UNLESS OTHERWISE SPECIFIED: DIA. IN INCHES	CORRUGATIONS IF METAL PIPE IS SPECIFIED	TYPE	GRADE %	SKEW DEG.	HEADWALL DITCHDAM TON	OUTLET APRON TON	ELBOW	ANCHOR SETS	* PLACE CLASS 7 RIPRAP ** PLACE CLASS 8 RIPRAP ALL OTHERS CLASS 4 RIPRAP
0.00	BEGIN PROJECT. JUNCTION WITH ROAD #24												
0.06	30'			24"		1	SAME	SAME	2	*10			REMOVE EXISTING 15" CULVERT PLACE CLASS 7 RIPRAP TO FILL
													CAVITY IN FILLSLOPE AT OUTLET
0.10	30'			18"		2	-5	80°	1				INSTALL IN LOCATION AS STAKED
	20'			18"						2	1	1	INSTALL OUTLET PIPE
0.16	34'			24"		1	SAME	SAME	2	3			REMOVE EXISTING 18" CULVERT
0.23	34'			18"		1	-5	80°	1	2			INSTALL IN LOCATION AS STAKED
0.28	30'			18"		2	-5	80°	1				REMOVE EXISTING 18" CULVERT
	20'			18"						2	1	1	INSTALL OUTLET PIPE
0.30	SPUR ROAD #2430011			LEFT									
0.37	36'			18"		1	-8	80°	1	2			INSTALL IN LOCATION AS STAKED
0.39	SWITCHBACK RIGHT												
0.42	36'			18"			-8	100°	1	2			INSTALL IN LOCATION AS STAKED
0.47	EXISTING NEWER 18" CULVERT												
0.53	EXISTING NEWER 18" CULVERT												
0.63	36'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT CONSTRUCT 25' LONG OUTLET DITCH
0.66	EXISTING NEWER 18" CULVERT												
0.70	30'			18"		2	-5	100°	1	2			INSTALL IN LOCATION AS STAKED
	10'			18"							1		INSTALL OUTLET PIPE
0.73	EXISTING NEWER 18" CULVERT												
0.76	EXISTING NEWER 24" CULVERT												
0.82	EXISTING NEWER 18" CULVERT												
0.88	34'			18"		1	-5	100°	1	2			REMOVE EXISTING 18" CULVERT
0.92	34'			18"		1	SAME	SAME	1	2			INSTALL IN LOCATION AS STAKED
0.99	EXISTING NEWER 24" CULVERT												
1.06	EXISTING NEWER 18" CULVERT												
1.10	EXISTING NEWER 24" CULVERT												
1.16	SWITCHBACK LEFT												
1.19	EXISTING NEWER 24" CULVERT												
1.24	EXISTING NEWER 24" CULVERT												

NOTE: Items 60274 & 60275 shall meet the requirements of 706.08, type (s), Smooth Wall Polyethylene Pipe. All inlet ends shall be bevel cut on the job site as shown on the Drainage Construction Details.

DRAINAGE LISTING

SHEET	TOTAL SHEETS
13	18

PROJECT: DAN THIN RE-OFFER 2 TIMBER SALE ROAD NUMBER: 2420

SEE THE WORK SUMMARY SHEETS FOR WORK DESCRIPTION AT EACH LOCATION. RIDGE DIVIDE

Design		As Built		Allowable Alternates		Installation Details							Remarks
MILE POST	L.F.	MILE POST	L.F.	ALL PIPES SHALL BE PLASTIC UNLESS OTHERWISE SPECIFIED: DIA. IN INCHES	CORRUGATIONS IF METAL PIPE IS SPECIFIED	TYPE	GRADE %	SKEW DEG.	HEADWALL DITCHDAM TON	OUTLET APRON TON	ELBOW	ANCHOR SETS	* PLACE CLASS 7 RIPRAP ** PLACE CLASS 8 RIPRAP ALL OTHERS CLASS 4 RIPRAP
1.28	EXISTING NEWER 24" CULVERT (NEEDS OUTLET PIPE)					2							
	10'			24"						2	1		INSTALL OUTLET PIPE
1.33	EXISTING NEWER 18" CULVERT												
1.40	EXISTING NEWER 18" CULVERT												
1.45	30'			18"		2	5%	100°	1				INSTALL IN LOCATION AS STAKED
	10'			18"						2	1		INSTALL OUTLET PIPE
1.50	EXISTING NEWER 18" CULVERT												
1.55	EXISTING NEWER 18" CULVERT												
1.58	EXISTING NEWER 24" CULVERT												
1.64	EXISTING NEWER 18" CULVERT												
1.70	EXISTING NEWER 36" CULVERT								*4				BEVEL CUT INLET & INSTALL INLET HEADWALL
1.72	SWITCHBACK RIGHT												
1.74	EXISTING NEWER 36" CULVERT								*4				BEVEL CUT INLET & INSTALL INLET HEADWALL
1.78	30'			18"		2	5%	100°	1				INSTALL IN LOCATION AS STAKED
	10'			18"						2	1		INSTALL OUTLET PIPE
1.86	EXISTING NEWER 18" CULVERT												
1.92	EXISTING NEWER 18" CULVERT												
1.96	36'			18"		2	8%	100°	1	2			INSTALL IN LOCATION AS STAKED
2.01	EXISTING NEWER 18" CULVERT												
2.10	EXISTING NEWER 18" CULVERT												
2.16	EXISTING NEWER 24" CULVERT												
2.18	OLD SPUR ROAD #2421 LEFT												
2.19	EXISTING NEWER 18" CULVERT												
2.24	EXISTING NEWER 18" CULVERT												
2.31	EXISTING NEWER 18" CULVERT (NEEDS OUTLET PIPE)					2							
	20'			18"							1	1	INSTALL OUTLET PIPE
2.37	EXISTING NEWER 48" CULVERT												
2.43	30'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT
2.44	UNIT BOUNDARY AT EDGE OF OLD CLEARCUT												
2.52	30'			18"		2	-5	100°	1				INSTALL IN LOCATION AS STAKED
	20'			18"						2	1	1	INSTALL OUTLET PIPE
2.63	34'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT
2.73	SWITCHBACK LEFT												
2.75	SPUR ROAD 2420016 LEFT (TEMP. ROAD FOR DAN THIN TIMBER SALE												
2.77	40'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT
2.80	40'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT

NOTE: Items 60274 & 60275 shall meet the requirements of 706.08, type (s), Smooth Wall Polyethylene Pipe. All inlet ends shall be bevel cut on the job site as shown on the Drainage Construction Details.

DRAINAGE LISTING

SHEET	TOTAL SHEETS
14	18

PROJECT: DAN THIN RE-OFFER 2 TIMBER SALE ROAD NUMBER: 2420

SEE THE WORK SUMMARY SHEETS FOR WORK DESCRIPTION AT EACH LOCATION. RIDGE DIVIDE

Design		As Built		Allowable Alternates		Installation Details							Remarks
MILE POST	L.F.	MILE POST	L.F.	ALL PIPES SHALL BE PLASTIC UNLESS OTHERWISE SPECIFIED: DIA. IN INCHES	CORRUGATIONS IF METAL PIPE IS SPECIFIED	TYPE	GRADE %	SKEW DEG.	HEADWALL DITCHDAM TON	OUTLET APRON TON	ELBOW	ANCHOR SETS	* PLACE CLASS 7 RIPRAP ** PLACE CLASS 8 RIPRAP ALL OTHERS CLASS 4 RIPRAP
2.82	34'			24"		2	SAME	SAME	2				REMOVE EXISTING 24" CULVERT
	20'			24"						3	1	1	INSTALL OUTLET PIPE
2.88	40'			24"		2	SAME	SAME	2				REMOVE EXISTING 24" CULVERT
	10'			24"						3	1		INSTALL OUTLET PIPE
2.94	36'			18"		2	5%	100°	1				INSTALL IN LOCATION AS STAKED
	20'			18"						2	1	1	INSTALL OUTLET PIPE
3.02	40'			24"		2	SAME	SAME	2				REMOVE EXISTING 18" CULVERT
	10'			24"						3	1		INSTALL OUTLET PIPE
3.08	40'			24"		2	SAME	SAME	2				REMOVE EXISTING 18" CULVERT
	20'			24"						3	1	1	INSTALL OUTLET PIPE
3.14	34'			18"		2	5%	100°	1				INSTALL IN LOCATION AS STAKED
	20'			18"						2	1	1	INSTALL OUTLET PIPE
3.19	36'			24"		1	SAME	SAME	2	3			REMOVE EXISTING 24" CULVERT
3.28	36'			24"		1	6%	100°	2	3			INSTALL IN LOCATION AS STAKED
3.35	36'			18"		2	5%	100°	1				INSTALL IN LOCATION AS STAKED
	20'			18"						2	1	1	INSTALL OUTLET PIPE
3.39	50'			24"		1	SAME	SAME	2	3			REMOVE EXISTING 24" CULVERT
3.40	JUNCTION WITH ROAD #2430013 RIGHT TO CELL PHONE TOWER												
3.46	36'			18"		1	7%	100°	1	2			INSTALL IN LOCATION AS STAKED
3.64	SHORT SPRUR ROAD RIGHT TO VIEW POINT												
3.80	40'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT
3.86	30'			18"		1	SAME	SAME	1	2			REMOVE EXISTING 18" CULVERT
3.90	END OF PROJECT, JUNCTION SPUR ROAD 2420020 (TEMP. ROAD FOR DAN THIN TIMBER SALE)												

TOTAL CULVERT QUANTITIES		
18" = 782 L.F.	OUTLET PIPE ELBOWS = 15 EACH	CLASS 4 RIPRAP = 111 TONS
24" = 340 L.F.	OUTLET PIPE ANCHOR SETS = 9 EACH	CLASS 7 RIPRAP = 18 TONS
18"OUTLET PIPE = 170 L.F.	REMOVAL OF CULVERTS = 16 EACH	REPAIR CULVERTS = 2 EACH
24"OUTLET PIPE = 70 L.F.		

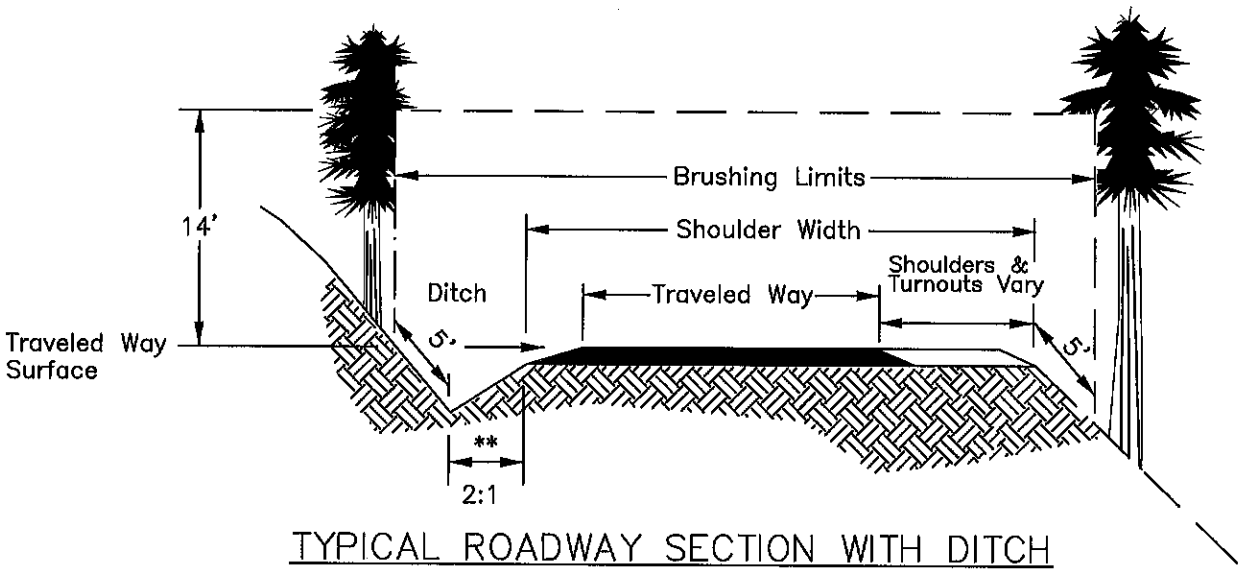
NOTE: Items 60274 & 60275 shall meet the requirements of 706.08, type (s), Smooth Wall Polyethylene Pipe. All inlet ends shall be bevel cut on the job site as shown on the Drainage Construction Details.

SHEET	TOTAL SHEETS
15	18

DAN THIN RE-OFFER 2 TIMBER SALE ROADS

ROADSIDE BRUSHING DETAILS

Item 23050



TYPICAL ROADWAY SECTION WITH DITCH

ROAD NUMBER	MILE POST TO MILE POST
#2420	M.P. 0.00 – 3.90

GENERAL NOTES

**1. Normal construction standards shown. Existing conditions in the field may vary depending on the actual shoulder and ditch constructed and maintained.

2. No trees less than 6" in diameter shall remain inside the brushing limits. Scatter material outside brushing along the fillslope and out of drainage areas. See General Notes, Item 23050.

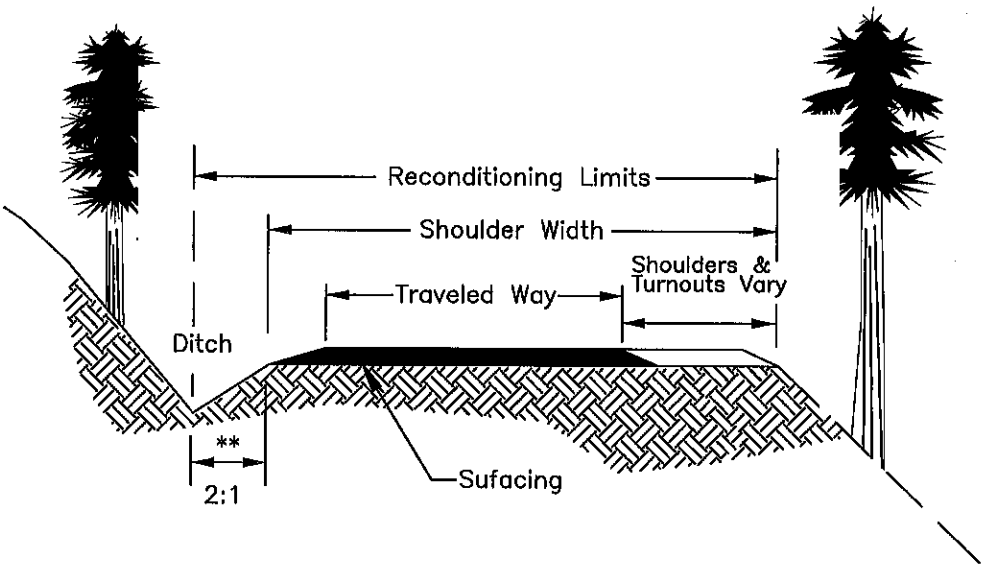
3. Beyond bottom of the ditch and the roadway reconditioning limits all vegetation shall be cut within 6" of the ground line or protuding solid object.

4. All culvert catchbasins shall be brushed.

5. Upon completing mechanical or hand brushing operations, all sticks and limbs larger than 1" in diameter and 18" long shall be removed from the ditchline and roadway.

SHEET	TOTAL SHEETS
16	18

DAN THIN RE-OFFER 2 TIMBER SALE ROADS
ROAD RECONDITIONING DETAILS
Item 30322



TYPICAL ROADWAY SECTION WITH DITCH

ROAD NUMBER	MILE POST TO MILE POST
#2420	M.P. 0.00 – 3.90

GENERAL NOTES

**1. Normal construction standards shown. Existing conditions in the field may vary depending on the actual shoulder and ditch constructed and maintained. See General Notes, Item 30322.

2. All culvert inlets, catchbasins, and outlets shall be cleaned to allow maximum water flow.

3. All culvert outlet ditches and roadway lead-off ditches shall be cleaned and shaped to allow maximun water flow.

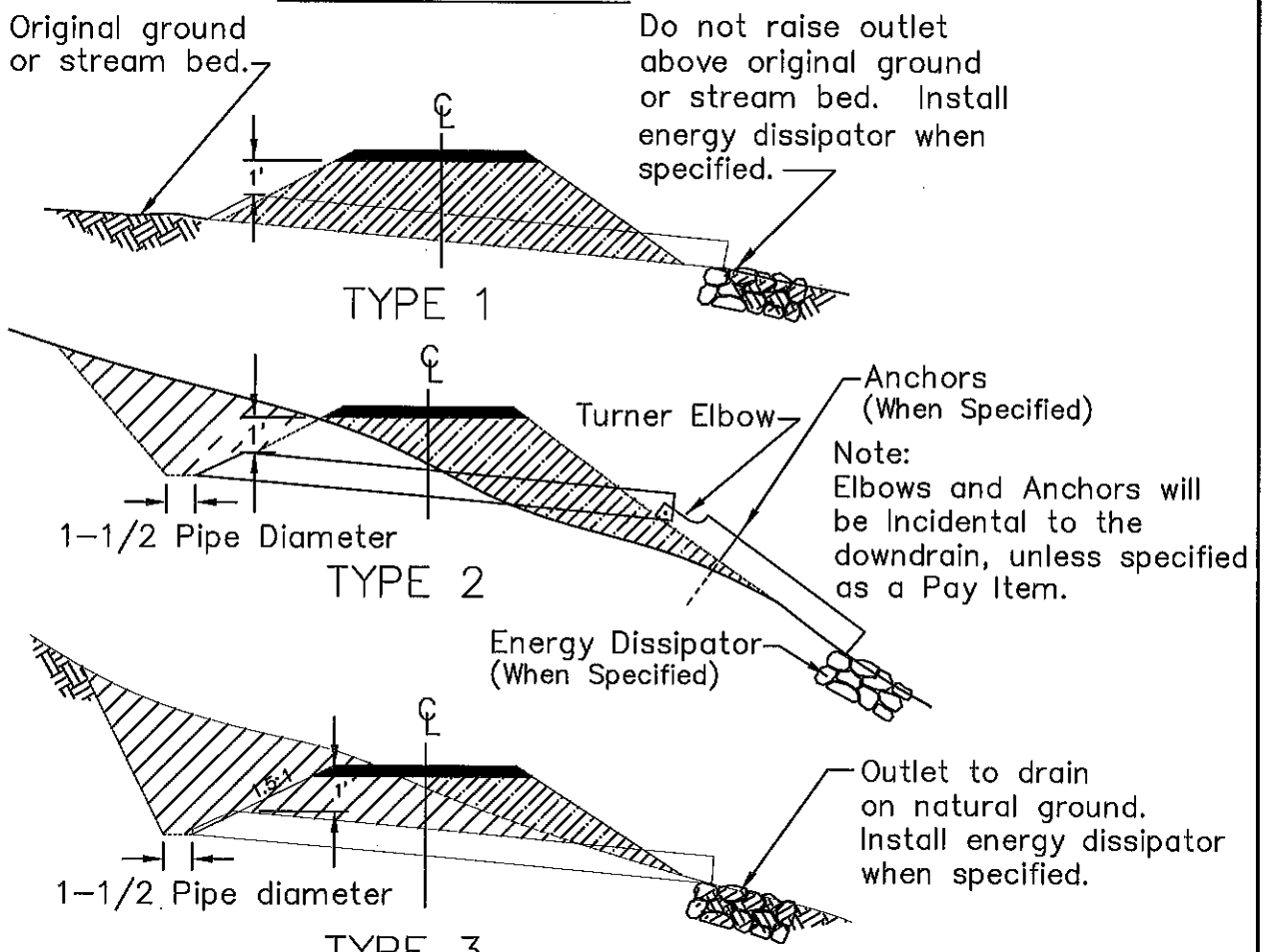
4. All unsuitable, excess, and oversize material generated from reconditioning the ditch or roadway shall be removed and distributed uniformly on the fillslope.

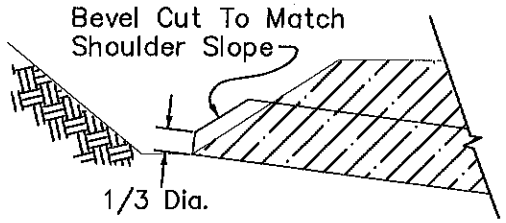
5. Roadway shoulder berms shall not be allowed.

SHEET	TOTAL SHEETS
17	18

DAN THIN RE-OFFER 2 TIMBER SALE
DRAINAGE CONSTRUCTION DETAILS

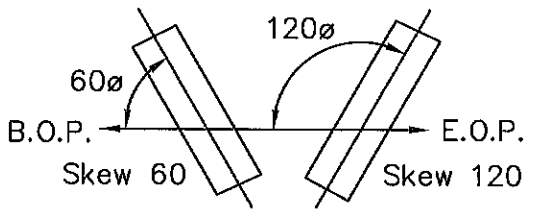
CULVERT TYPES





NOTE: All culverts shall be beveled at the inlet.

BEVELED INLET DETAIL

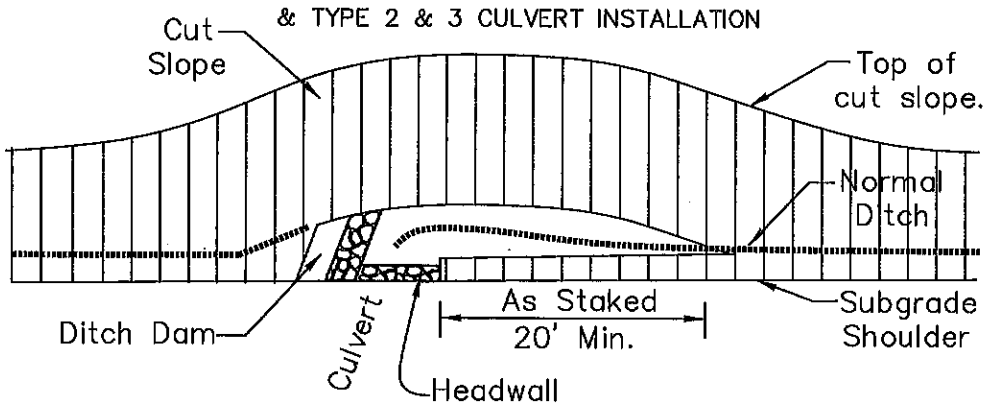


SKEW DIAGRAM

Plan View

CATCH BASIN DETAIL

& TYPE 2 & 3 CULVERT INSTALLATION

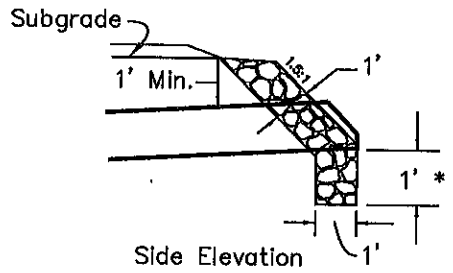


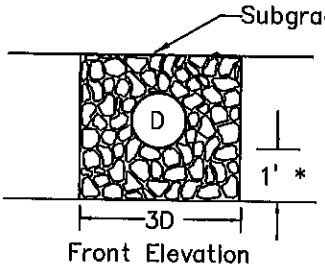
ANCHOR DESCRIPTION

Anchors (Each) shall consist of two 6' steel fence posts 1.5 lb./foot and No. 9 galvanized wire.
Posts shall be driven a minimum of 3' into the ground.
3 strands of wire shall be twisted together and encompass the entire circumference of the downpipe.
The number of Anchors sets per installation will be specified on the drawings.
1 set of Anchors will be required per 20' length of Plastic Downpipe.

SHEET	TOTAL SHEETS
18	18

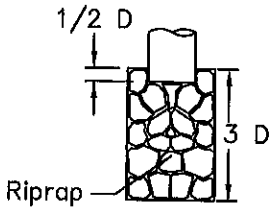
DAN THIN RE-OFFER 2 TIMBER SALE
DRAINAGE CONSTRUCTION DETAILS



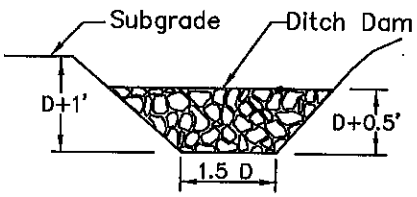


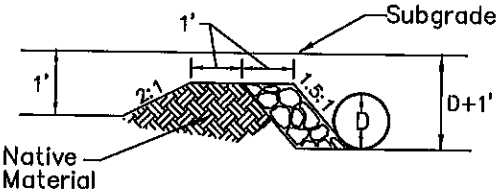
* for culvert over 24" in diameter otherwise 0'.

HAND-PLACED RIPRAP HEADWALL

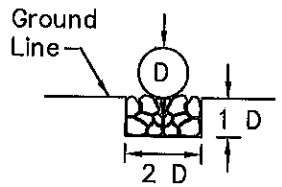


ENERGY DISSIPATOR PLAN VIEW



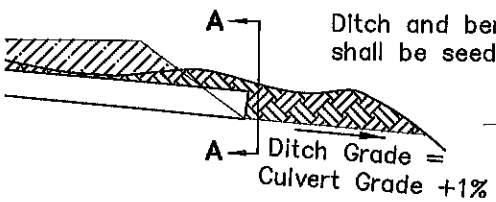


PLACED RIPRAP DITCH DAM



Apron surface shall be left with protruding riprap for velocity break.

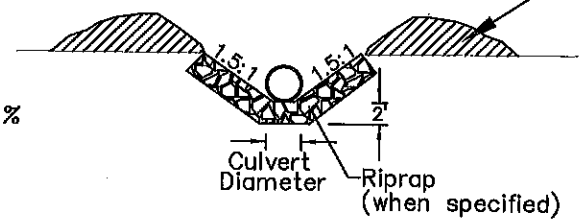
ENERGY DISSIPATOR ELEV. VIEW



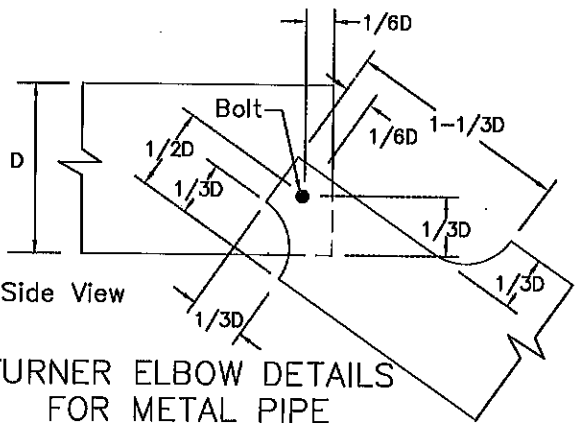
Ditch and berm shall be seeded.

OUTLET DITCH

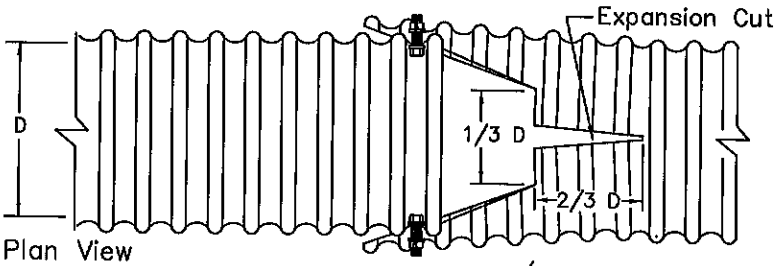
Material shall be deposited uniformly on both sides of ditch

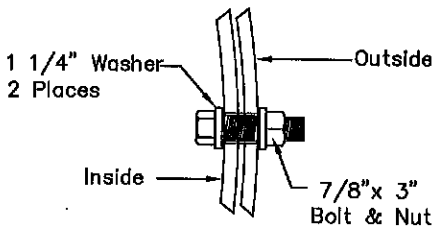


SECTION A-A
OUTLET/LEAD-OFF DITCH

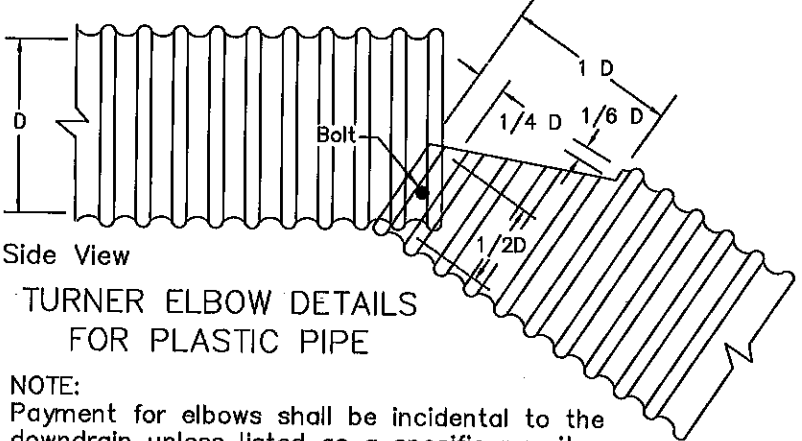


TURNER ELBOW DETAILS FOR METAL PIPE

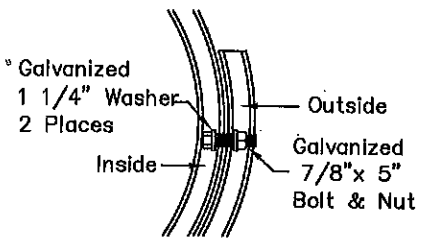




BOLT DETAIL FOR METAL PIPE



TURNER ELBOW DETAILS FOR PLASTIC PIPE



BOLT DETAIL FOR PLASTIC PIPE

NOTE:
Payment for elbows shall be incidental to the downdrain unless listed as a specific pay item.

PART I - SCHEDULE OF ITEMS

SECTION B - SERVICES AND PRICES

DAN THIN RE-OFFER 2 TIMBER SALE

Darrington Ranger District
Mount Baker-Snoqualmie National Forest
Washington State, Snohomish County

* Denote a Contract Quantity

PROJECT: Road 2420 (Milepost 0.00 to 3.90)			TIMBER SALE ROAD COSTS			
	ITEM NO.	DESCRIPTION	PAY UNIT	EST. QTY.	UNIT PRICE	TOTAL PRICE
	15101	Mobilization	Lump Sum	1	$6,695.00	$6,695.00
	20301A	Removal of culvert	Each	16	$106.25	$1,700.00
	20301B	Removal of culvert piece (milepost 1.28)	Each	1	$51.00	$51.00
	20356	Removal of culvert end by cutting or beveling	Each	2	$68.00	$136.00
	20419	Drainage excavation, type: Outlet/Lead-off ditch	Foot	25	$4.25	$106.25
	20950	Pipe bedding	Ton	246	$20.40	$5,018.40
	23050	Roadside Brushing	Mile	3.90	$880.00	$3,432.00
	25101A	Placed riprap, class 4 (Commercial Source)	Ton	111	$34.00	$3,774.00
	25101B	Placed riprap, class 7 (Commercial Source)	Cubic Yard	18	$30.00	$540.00
	30322	Road reconditioning, compaction method A	Mile	3.90	$1,075.00	$4,192.50
	32201	Aggregate base, grading equal to the Washington State DOT mix 1-1/4" minus, dense graded, compaction method A (Commercial Source)	Ton	559	$20.40	$11,403.60
	60209	Pipe Elbow (for 18" & 24" outlet pipe)	Each	15	$64.00	$960.00
	60273	Anchor assembly for polyethylene pipe	Each	9	$72.25	$650.25
	60275A	18-Inch high density polyethylene outlet pipe with smooth interior and annular exterior	Foot	170	$18.70	$3,179.00
	60275B	24-Inch high density polyethylene outlet pipe with smooth interior and annular exterior	Foot	70	$23.80	$1,666.00
	60275A	18-Inch high density polyethylene pipe with smooth interior and annular exterior, compaction method B	Foot	782	$23.80	$18,611.60
	60275B	24-Inch high density polyethylene pipe with smooth interior and annular exterior, compaction method B	Foot	340	$29.75	$10,115.00
	60710	Recondition drainage structure, repair culvert inlet end (bevel cut)	Each	2	$68.00	$136.00
*	62501	Seeding, dry method (with weed free straw mulch)	Acre	0.30	$4,250.00	$1,275.00
					Total Costs, Road #2420	**$73,641.60**

Specification and Supplemental Specification List for
DAN THIN RE-OFFER 2 TIMBER SALE

Road Name		Ridge Divide				
Road Number		**2420**				
Termini (Miles)		0.00 to 3.90				
Construction (Miles)						
Reconstruction (Miles)		3.90				
Standard Spec. or Supplemental No.	Latest Revision Date	Specifications that are referenced by other specifications are not listed below. "X" denotes applicable standard specs. or Forest Service Supplemental specifications.				
Standard Specification	2003					
Preface	3/15/04	X				
101-109	2003	X				
101.01	04/04/07	X				
101.01	04/17/07	X				
101.03	06/16/06	X				
101.04	03/29/07	X				
101.04	03/11/05	X				
102.00	2/16/05	X				
103.00	2/16/05	X				
104.00	06/16/06	X				
104.03	3/3/05	X				
104.06	2/17/05	X				
105.02	01/18/07	X				
105.02	02/17/05	X				
105.02	02/17/05	X				
105.02	02/17/05	X				
105.05	5/12/04	X				
106.01	3/29/05	X				
106.07	5/11/04	X				
107.02	2/17/05	X				
107.05	5/11/04	X				
107.06	06/16/06	X				
107.08	03/29/05	X				
107.09	06/16/06	X				
107.10	06/16/07	X				
108.00	2/16/05	X				
109.00	2/17/05	X				
109.02	06/16/06	X				
151	2003	X				
155.00	5/11/04	X				
156.00	4/17/07	X				
157	2003	X				
157.03	1/20/05	X				
157.08	1/20/05	X				
203	2003	X				
203.01	2/25/05	X				
203.04	2/18/05	X				
203.05	2/18/05	X				
203.08	2/24/05	X				
204.00	4/9/07	X				
208	2003	X				
208.04	6/13/07	X				
208.09	6/13/07	X				

Specification and Supplemental Specification List for
DAN THIN RE-OFFER 2 TIMBER SALE

Road Name		Ridge Divide				
Road Number		**2420**				
Termini (Miles)		0.00 to 3.90				
Construction (Miles)						
Reconstruction (Miles)		3.90				
Standard Spec. or Supplemental No.	Latest Revision Date	Specifications that are referenced by other specifications are not listed below. "X" denotes applicable standard specs. or Forest Service Supplemental specifications.				
Standard Specification	2003					
208.13	6/13/07	X				
209	2003	X				
209.10	10/23/07	X				
209.11	10/23/07	X				
230.00	10/11/06	X				
251	2003	X				
251.03	6/18/07	X				
251.07	6/18/07	X				
303.00	5/11/07	X				
322.00	10/24/07	X				
571.00	3/15/05					
602	2003	X				
602.03	9/6/05	X				
602.06	7/3/07	X				
607	2003	X				
607.06	7/3/07	X				
625	2003	X				
625.03	2/25/05	X				
625.04	4/13/07	X				
625.05	3/30/08	X				
625.07	3/20/08	X				
703	2003	X				
703.05	12/7/06	X				
705	2003	X				
705.02	4/13/07	X				
709	2003	X				
712	2003	X				
712.01	7/3/07	X				
713	2003	X				
713.05	3/2/05	X				
718	2003	X				
718.02	3/2/05	X				

Dan Thin Re-Offer 2 Timber Sale Road 2420

Supplemental Project Specifications

Table of Contents

Preface

Preface_wo_03_15_2004_m

Delete all but the first paragraph and add the following:

The Forest Service, US Department of Agriculture has adopted FP-03 for construction of National Forest System Roads.

101 - Terms, Format, and Definitions

101.00_nat_us_07_25_2005

Required for all Metric contracts

101.01_nat_us_04_04_2007

Required in ALL contracts -- deletes references to TAR (Dept of Transportation Acquisition Regulations)

101.01 Meaning of Terms

Delete all references to the TAR (Transportation Acquisition Regulations) in the specifications.

101.01_nat_us_04_17_2007

Use in all FS-2400-6 & FS-2400-6T Timber Sale Contracts -- deletes reference to the FAR

101.01 Meaning of Terms

Delete all references to the FAR (Federal Acquisition Regulations) in the specifications.

101.03_nat_us_06_16_2006

101.03 Abbreviations.

Add the following to (a) Acronyms:

AFPA	American Forest and Paper Association
MSHA	Mine Safety and Health Administration
NIST	National Institute of Standards and Technology
NESC	National Electrical Safety Code
WCLIB	West Coast Lumber Inspection Bureau

Add the following to (b) SI symbols:

mp	Milepost
ppm	Part Per Million

101.04_nat_us_03_29_2007

101.04 Definitions.

Delete the following definitions and substitute the following:

Bid Schedule--The Schedule of Items.

Bridge--No definition.

Contractor--The individual or legal entity contracting with the Government for performance of prescribed work. In a timber sale contract, the contractor is the "purchaser".

Culvert--No definition.

Right-of-Way--A general term denoting (1) the privilege to pass over land in some particular line (including easement, lease, permit, or license to occupy, use, or traverse public or private lands), or (2) Real property necessary for the project, including roadway, buffer areas, access, and drainage areas.

Add the following:

Adjustment in Contract Price--"Equitable adjustment," as used in the Federal Acquisition Regulations, or "construction cost adjustment," as used in the Timber Sale Contract, as applicable.

Change--"Change" means "change order" as used in the Federal Acquisition Regulations, or "design change" as used in the Timber Sale Contract.

Design Quantity--"Design quantity" is a Forest Service method of measurement from the FS-96 *Forest Service Specifications for the Construction of Roads and Bridges.* Under these FP specifications this term is replaced by the term "Contract Quantities".

Forest Service--The United States of America, acting through the Forest Service, U.S. Department of Agriculture.

Neat Line--A line defining the proposed or specified limits of an excavation or structure.

Pioneer Road--Temporary construction access built along the route of the project.

Purchaser--The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through agents, employees, or subcontractors.

Protected Streamcourse--A drainage shown on the plans or timber sale area map that requires designated mitigation measures.

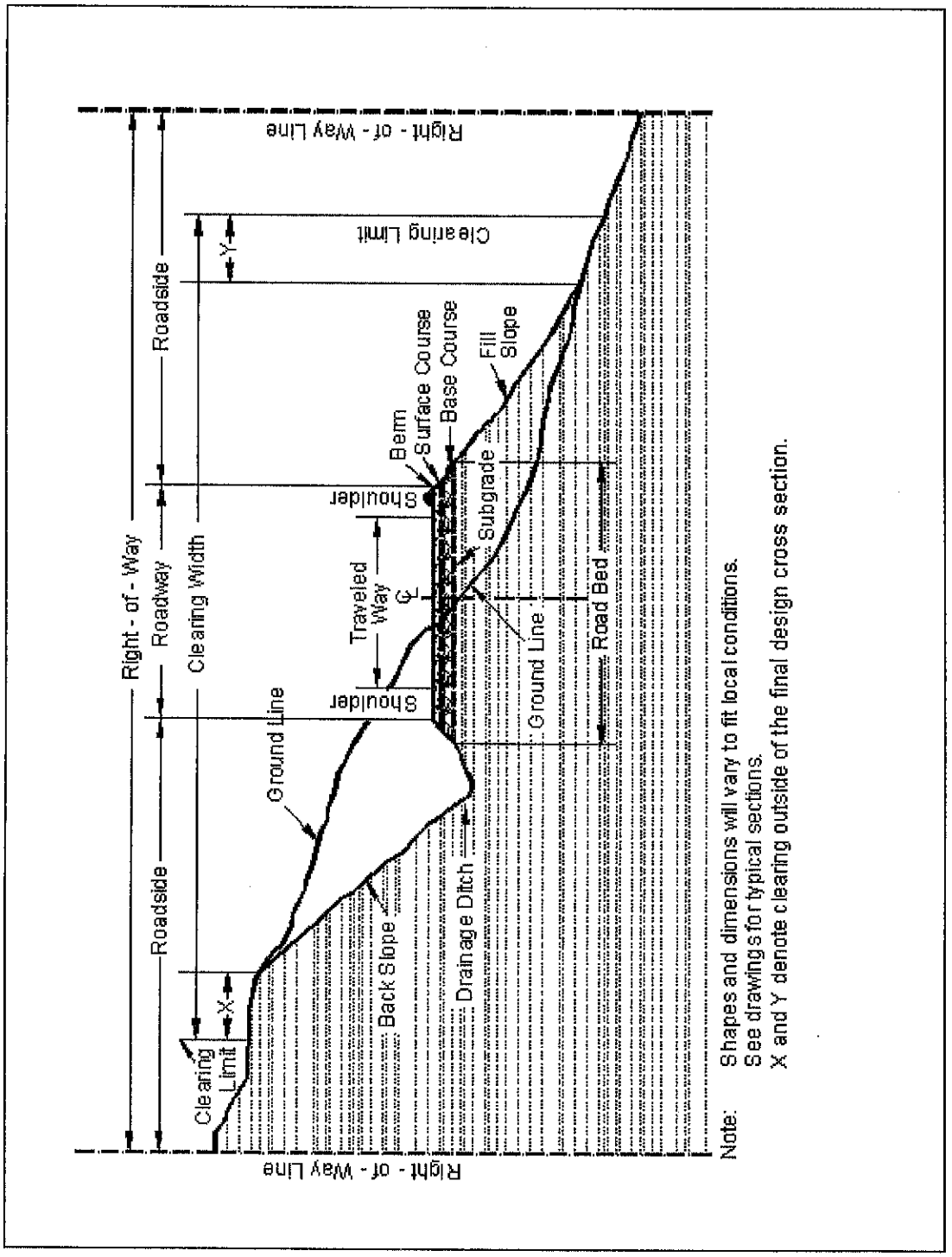
Road Order--An order affecting and controlling traffic on roads under Forest Service jurisdiction. Road Orders are issued by a designated Forest Officer under the authorities of 36 CFR, part 260.

Schedule of Items--A schedule in the contract that contains a listing and description of construction items, quantities, units of measure, unit price, and amount.

Utilization Standards--The minimum size and percent soundness of trees described in the specifications to determine merchantable timber.

Add Figure 101-1—Illustration of road structure terms:

Figure 101-1—Illustration of road structure terms.



101.04_nat_us_11_06_2007

Use with all Timber Sale contracts

101.04 Definitions.

Delete the following definitions:
Contract Modification
Day
Notice to Proceed

Solicitation

102 - Bid, Award, and Execution of Contract

102.00_nat_us_02_16_2005

102 Bid, Award, and Execution of Contract

Delete Section 102 in its entirety.

103 - Scope of Work

103.00_nat_us_02_16_2005

Deletions

Delete all but subsection 103.01 Intent of Contract.

104 - Control of Work

104.00_nat_us_06_16_2006

Deletions

Delete Sections 104.01, 104.02, and 104.04.

104.03_nat_us_03_03_2005

Use with all TS Contracts

104.03 Specifications and Drawings.

Delete 104.03.

104.06_nat_us_02_17_2005

Authorizes use of Forest Service Roads

Add the following subsection:

104.06 Use of Roads by Contractor

The Contractor is authorized to use roads under the jurisdiction of the Forest Service for all activities necessary to complete this contract, subject to the limitations and authorizations designated in the Road Order(s) or described in the contract, when such

use will not damage the roads or national forest resources, and when traffic can be accommodated safely.

105 - Control of Material

105.02_nat_us_01_18_2007

105.02 Material Sources.

105.02(a) Government-provided sources.

Add the following:

Comply with the requirements of 30 CFR 56, subparts B and H. Use all suitable material for aggregate regardless of size unless otherwise designated. When required, re-establish vegetation in disturbed areas according to section 625.

105.05_nat_us_05_12_2004

Required in all Contracts

105.05 Use of Material Found in the Work.

Delete 105.05 (a) and (b) and the last sentence of the second paragraph and substitute the following:

Materials produced or processed from Government lands in excess of the quantities required for performance of this contract are the property of the Government. The Government is not obligated to make reimbursement for the cost of producing these materials.

106 - Acceptance of Work

106.01_nat_us_07_31_2007

Include in all TIMBER CONTRACTS (2400-6/6T and 2400-13/13T) for Timber Sales and Stewardship contracts. Clarifies disputed test results

106.01 Conformity with Contract Requirements.

Delete Subsection 106.01 and substitute the following:

References to standard test methods of AASHTO, ASTM, GSA, and other recognized standard authorities refer to the methods in effect on the date of solicitation for bids.

Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.

Incorporate manufactured materials into the work according to the manufacturer's recommendations or to these specifications, whichever is more strict.

Plan dimensions and contract specification values are the values to be strived for and complied with as the design values from which any deviations are allowed. Perform work

and provide material that is uniform in character and reasonably close to the prescribed value or within the specified tolerance range. The purpose of a tolerance range is to accommodate occasional minor variations from the median zone that are unavoidable for practical reasons.

When standard manufactured items are specified (such as fence, wire, plates, rolled shapes, pipe conduits, etc., that are identified by gauge, unit mass, section dimensions, etc.), the identification will be considered to be nominal masses or dimensions. Unless specific contract tolerances are noted, established manufacturing tolerances will be accepted.

The Government may inspect, sample, or test all work at any time before final acceptance of the project. When the Government tests work, copies of test reports are furnished to the Contractor upon request. Government tests may or may not be performed at the work site. If Contractor testing and inspection is verified by the Government, the Contractor's results may be used by the Government to evaluate work for acceptance. Do not rely on the availability of Government test results for process control.

Acceptable work conforming to the contract will be paid for at the contract unit bid price. Four methods of determining conformity and accepting work are described in Subsections 106.02 to 106.05 inclusive. The primary method of acceptance is specified in each Section of work. However, work may be rejected at any time it is found by any of the methods not to comply with the contract.

Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted, at no cost to the Government.

(a) Disputing Government test results. **If the accuracy of Government test results is disputed, promptly inform the CO. If the dispute is unresolved after reasonable steps are taken to resolve the dispute, further evaluation may be obtained by written request. Include a narrative describing the dispute and a proposed resolution protocol that addresses the following:**

(1) Sampling method;
(2) Number of samples;
(3) Sample transport;
(4) Test procedures;
(5) Testing laboratories;
(6) Reporting;
(7) Estimated time and costs; and
(8) Validation process.

If the evaluation requires additional sampling or testing be performed, mutually agree with the Government on witnessing procedures and on sampling and testing by a third party laboratory. Use a third party laboratory accredited by the AASHTO accreditation program. Provide proof of the laboratory's accreditation for the test procedures to be used. Do not use the same laboratory that produced the disputed Government test results or that produced the test results used as a basis for the dispute.
The CO will review the proposed resolution protocol and may modify it before final approval and execution.

The Government will use the approved resolution protocol test results to determine the validity of the disputed testing. If the Government test results are validated, the Contractor will be responsible for all costs associated with developing and performing the resolution protocol. If the Government test results are not validated, the Government will be responsible for all costs associated with developing and performing the resolution protocol. If the validity of the Government test results cannot be determined, the Contractor and Government will equally share all costs associated with developing and carrying out the resolution protocol.

(b) Alternatives to removing and replacing non-conforming work. As an alternative to removal and replacement, the Contractor may submit a written request to:

(1) Have the work accepted at a reduced price; or

(2) Be given permission to perform corrective measures to bring the work into conformity.

The request must contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, aesthetics, and other tangible engineering basis. The CO will determine disposition of the nonconforming work.

106.07_nat_us_05_11_2004

106.07 Delete

Delete subsection 106.07.

107 - Legal Relations and Responsibility to the Public

107.05_nat_us_05_11_2004

107.05 Responsibility for Damage Claims.

Delete the entire subsection.

107.06_nat_us_06_16_2006

Use in all contracts

107.06 Contractor's Responsibility for Work.

Delete the following from the first paragraph.
"except as provided in Subsection 106.07".

107.08_nat_us_03_29_2005

Include in all TS contracts. This is covered in B(T) Provision 6.3

107.08 Sanitation, Health, and Safety

Delete the entire subsection.

107.09_nat_us_06_16_2006

107.09 Legal Relationship of the Parties.

Delete the entire subsection.

107.10_nat_us_06_16_2006

Requires hazardous spill plan & notification of spills

107.10 Environmental Protection.

Add the following:

Design and locate equipment repair shops, stationary refueling sites, or other facilities to minimize the potential and impacts of hazardous material spills on Government land.

Before beginning any work, submit a Hazardous Spill Plan. List actions to be taken in the event of a spill. Incorporate preventive measures to be taken, such as the location of mobile refueling facilities, storage and handling of hazardous materials, and similar information. Immediately notify the CO of all hazardous material spills. Provide a written narrative report form no later than 24 hours after the initial report and include the following:

- Description of the item spilled (including identity, quantity, manifest number, and other identifying information).
- Whether amount spilled is EPA or state reportable, and if so whether it was reported, and to whom.
- Exact time and location of spill including a description of the area involved.
- Containment procedures.
- Summary of any communications the Contractor had with news media, Federal, state and local regulatory agencies and officials, or Forest Service officials.
- Description of clean-up procedures employed or to be employed at the site including final disposition and disposal location of spill residue.

When available provide copies of all spill related clean up and closure documentation and correspondence from regulatory agencies.

The Contractor is solely responsible for all spills or leaks that occur during the performance of this contract. Clean up spills or leaks to the satisfaction of the CO and in a manner that complies with Federal, state, and local laws and regulations.

108 - Prosecution and Progress

108.00_nat_us_02_16_2005

108 Delete.

Delete Section 108 in its entirety.

109 - Measurement and Payment

109.00_nat_us_02_17_2005

109 Deletions

Delete the following entire subsections:

109.06 Pricing of Adjustments.
109.07 Eliminated Work.
109.08 Progress Payments.
109.09 Final Payment.

109.02_nat_us_06_16_2006

109.02 Measurement Terms and Definitions.

(b) Contract quantity.

Add the following:

Contract quantities will be adjusted only when there are errors in the original design of 15% or more.

Change the following:

"(b) Cubic yard" to "(c) Cubic yard".

Add the following definition:

(p) Thousand Board Feet (Mbf). 1,000 board feet based on nominal widths, thickness, and extreme usable length of each piece of lumber or timber actually incorporated in the job. For glued laminated timber, 1,000 board feet based on actual width, thickness, and length of each piece actually incorporated in the job.

155 - Schedules for Construction Contracts

155.00_nat_us_05_11_2004

155 Delete.

Delete Section 155 in its entirety.

156 - Public Traffic

156.00_nat_us_04_17_2007

Replaces FP 156 and simplifies requirements for very low volume roads. Does not require additional supplemental specifications in 156. Fill in the blanks.

Delete Section 156 in its entirety and replace with the following:

Description

156.01 This work consists of controlling and protecting public traffic adjacent to and within the project.

Material

156.02 Conform to the MUTCD and the following Sections and Subsections:

Construction sign panels	633
Retro-reflective sheeting	718.01
Temporary concrete barrier	618
Temporary plastic fence	710.11
Temporary traffic control devices	718.22

156.03 General. Unless otherwise provided for in Table 156-1, keep existing roads open to all traffic during road improvement work, and maintain them in a condition that will adequately accommodate traffic. Delays may not exceed 30 minutes at any one time followed by an open period of no less than 5 minutes.

Perform no work that interferes or conflicts with traffic or existing access to the roadway surface until a traffic control plan has been approved. Post construction signs and traffic control devices in conformance with MUTCD. All required signs will be in place and approved prior to beginning work on project.

If the Contractor agrees in writing to allow public traffic to use a new road being constructed prior to completion, it will be considered an existing road for traffic control purposes.

156.04 Temporary Traffic Control. Install and maintain temporary traffic control devices adjacent to and within the project as required by the approved traffic control plan and the MUTCD. Install and maintain traffic control devices as follows:

(a) Furnish and install traffic control devices before the start of construction operations.
(b) All detours outside of clearing limits will be approved in writing by the Contracting Officer as part of the traffic control plan.
(c) Install only those traffic control devices needed for each stage or phase.
(d) Relocate temporary traffic control devices as necessary.
(e) Remove devices that no longer apply to the existing conditions.
(f) Immediately replace any device that is lost, stolen, destroyed, or inoperative.
(g) Keep temporary traffic control devices clean.
(h) Remove all temporary traffic control devices upon contract completion or when approved.
(i) When required, use flaggers certified by the American Traffic Safety Services Association, the National Safety Council, the International Municipal Signal Association, a state agency, or other acceptable organization. Perform the work described under MUTCD Part 6. Use type III, VII, VIII, or IX retroreflective sheeting on flagger paddles. Do not use flags. Flaggers must wear high visibility safety apparel as required by MUTCD 6E.02.

156.05 Temporary Closures. Road segments may be closed as shown in Table 156-1. The maximum consecutive days of closure shall be followed by a minimum number of consecutive days open to traffic as shown. Maintain traffic control devices during closure period(s). Appropriate barricades and signs will be erected and maintained as shown in the traffic control plan or as otherwise designated.

Prior to closing roads during construction, give written notice to the Contracting Officer at least 10 days in advance.

Table 156-1
Temporary Road Closures

Road Number	**From Terminus** (Milepost)	**To Terminus** (Milepost)	**Maximum Consecutive Days of Closure**	**Purpose For Closure**
NONE				

156.06 Acceptance. Public traffic work will be evaluated under Subsection 106.02.

Measurement and Payment

156.07 Do not measure Public Traffic for payment. Compensation is made as an indirect payment.

157 - Soil Erosion Control

For all construction contracts

157.03 General.

Delete the first two paragraphs and add the following:

Submit an Erosion Control Plan detailing permanent and temporary control measures to minimize erosion and sedimentation during and after construction according to the contract specifications, contract permits, Section 107, and this Section. Contract permits amend the requirements of this Section. Do not modify the type, size, or location of any control or practice without approval. Submit the erosion control plan proposal at least 7 days before operations begin to the Contracting Officer for approval.

Reflect in the erosion control plan special concerns and measures necessary to protect resources and government improvements. Include:

1. The construction activities and sequence of implementation relating to specific erosion control measures.

2. The location and type of permanent controls to be implemented during construction.

3. The location and type of temporary controls to be implemented during construction.

4. For work in stream channels with running water a detailed dewatering plan.

5. For work in stream channels without flowing water describe level of ground and vegetative disturbance and measures to reduce potential sediment delivery.

6. Describe what monitoring will take place.

Add to the third paragraph:

Upon completion of construction at the site, all temporary dewatering materials and equipment are to be removed from Government property.

157.08 Water Crossings.

Add the following:

At any channel crossing where there is running water dewater by rerouting water flow around the site before and during excavation and embankment operations.

203 - Removal of Structures and Obstructions

203.01_nat_us_02_25_2005

Include in FS contracts with sections 201 and 203

203.01 Description.

Delete and replace with the following:

This work consists of disposing of construction slash and debris, salvaging, removing, and disposing of buildings, fences, structures, pavements, culverts, utilities, curbs, sidewalks, and other obstructions.

203.04_nat_us_02_18_2005

Include in FS contracts with Section 203

203.04 Removing Material.

Replace the fourth and fifth paragraphs with the following:

Where part of an existing culvert is removed, remove the entire culvert upstream from the removal. The remaining downstream culvert may be left in place if no portion of the culvert is within 12 inches of the subgrade, embankment slope, or new culvert or structure; and the culvert ends are sealed with concrete.

Remove structures and obstructions in the roadbed to 12 inches below subgrade elevation. Remove structures and obstructions outside the roadbed to 12 inches below finished ground or to the natural stream bottom.

203.05_nat_us_02_18_2005

Adds several FS disposal methods: windrowing, scattering, chipping, grinding, and more

203.05 Disposing of Material.

Add the following:

(e) Windrowing Construction Slash. Place construction slash outside the roadway in neat, compacted windrows approximately parallel to and along the toeline of embankment slopes. Do not permit the top of the windrows to extend above subgrade. Use construction equipment to matt down all material in a windrow to form a compact and uniform pile. Construct breaks of at least 15 feet at least every 200 feet in a windrow. Do not place windrows against trees. Obtain approval for pioneer roads. A pioneer road may be constructed to provide an area for placement of windrows, provided the excavated material is kept within the clearing limits and does not adversely affect the road construction.

(f) Scattering. Scatter construction slash outside the clearing limits without damaging trees. Limb all logs. Place logs and stumps away from trees, positioned so they will not roll, and are not on top of one another. Limb and scatter other construction slash to reduce slash concentrations.

(g) Chipping or Grinding. Use an approved chipping machine to grind slash and stumps greater than 3 inches in diameter and longer than 3 feet. Deposit chips or ground woody material on embankment slopes or outside the roadway to a loose depth less than 6 inches. Minor amounts of chips or ground woody material may be permitted within the roadway if they are thoroughly mixed with soil and do not form a layer.

(h) Debris Mat. Use tree limbs, tops, cull logs, split stumps, wood chunks, and other debris to form a mat upon which construction equipment is operated. Place stumps upside down and blend stumps into the mat.

(i) Decking Firewood Material. Remove brush from decks. Limb and deck logs that do not meet Utilization Standards according to Subsection 201.04 as directed by the CO. Cut logs to lengths less than 30 feet. Ensure that logs stacks are stable and free of brush and soil.

(j) Removal to designated locations. Remove construction slash to designated locations.

(k) Piling. Pile construction slash in designated areas. Place and construct piles so that if the piles are burned, the burning will not damage remaining trees. Keep piles free of dirt from stumps. Cut unmerchantable logs into lengths of less than 20 feet.

(l) Placing Slash on Embankment Slopes. Place construction slash on completed embankment slopes to reduce soil erosion. Place construction slash as flat as practicable on the completed slope. Do not place slash closer than 2 feet below subgrade. Priority for use of available slash is for: (1) through fills; (2) insides of curves; and (3) ditch relief outlets.

(m) Hydrological Sensitive Placement. Where required use this method in combination with other designated methods to dispose of material to reduce erosion and to aid in re-vegetation:

1. Place windrow segments on contours, wrap in type I geotextile.
2. Place logs as log erosion barriers on contours. Place logs so that 80% of their length is on the ground surface.
3. Scatter slash on bare or disturbed areas within or outside the clearing limits as directed.
4. Scatter chips or ground woody material on bare or disturbed areas within or outside the clearing limits as directed.

Place stumps in swales or on sites to form planting pockets. Place windrow segments on contours, wrap in type I geotextile.

203.08_nat_us_02_24_2005

Include in all contracts containing Section 201 and 203. Clarifies payment for construction slash disposal.

203.08 Payment

Add the following:

Disposal of construction slash will be compensated under the designated pay item in Section 201.

204 – Excavation and Embankment

Replace Section 204 in its entirety with the following:

Description

204.01 This work consists of excavating material, by means other than blasting, and constructing embankments. This includes furnishing, hauling, stockpiling, placing, disposing, sloping, shaping, compacting, and finishing earthen and rocky material.

204.02 Definitions.

(a) Excavation. Excavation consists of the following:

(1) Roadway excavation. All material excavated from within the right-of-way or easement areas, except subexcavation covered in (2) below and structure excavation covered in Sections 208 and 209. Roadway excavation includes all material encountered regardless of its nature or characteristics.

(2) Subexcavation. Material excavated from below subgrade elevation in cut sections or from below the original groundline in embankment sections. Subexcavation does not include the work required by Subsections 204.05, 204.06(b), and 204.06(c).

(3) Borrow excavation. Material used for embankment construction that is obtained from outside the roadway prism. Borrow excavation includes unclassified borrow, select borrow, and select topping.

(b) Embankment construction. Embankment construction consists of placing and compacting roadway or borrow excavation. This work includes:

(1) Preparing foundation for embankment;
(2) Constructing roadway embankments;
(3) Benching for side-hill embankments;
(4) Constructing dikes, ramps, mounds, and berms; and
(5) Backfilling subexcavated areas, holes, pits, and other depressions.

(c) Conserved topsoil. Excavated material conserved from the roadway excavation and embankment foundation areas that is suitable for growth of grass, cover crops, or native vegetation.

(d) Waste. Excess and unsuitable roadway excavation and subexcavation that cannot be used.

Material

204.03 Conform to the following Subsections:

Backfill material	704.03

Select borrow	704.07
Select topping	704.08
Topping	704.05
Unclassified borrow	704.06
Water	725.01

Construction Requirements

204.04 Preparation for Roadway Excavation and Embankment Construction. Clear the area of vegetation and obstructions according to Sections 201 and 203.

204.05 Reserved.

204.06 Roadway Excavation. Excavate as follows:

(a) General. Do not disturb material and vegetation outside the construction limits. Incorporate only suitable material into embankments. Replace any shortage of suitable material caused by premature disposal of roadway excavation. Dispose of unsuitable or excess excavation material according to Subsection 204.14.

At the end of each day's operations, shape to drain and compact the work area to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

Retrieve material deposited outside of the clearing limits as directed by the CO. Place unsuitable material in designated areas.

(b) Rock cuts. Excavate rock cuts by means other than blasting. Use mechanical or other methods approved by the CO.

(c) Earth cuts. Scarify earth cuts to 6 inches below subgrade within the roadbed limits. Compact the scarified material according to Subsection 204.11.

(d) Pioneer Roads. Road pioneering, slash disposal, and grubbing of stumps may proceed concurrently with excavation. Conduct excavation and placement operations so material to be treated under Section 201 will not be incorporated into the roadway unless specified in the slash treatment method. Maintain drainage during pioneering operations.

Remove snow and ice in advance of the work and deposit beyond the roadway limits in a manner that will not waste material or generate sediment. Do not incorporate snow and ice into embankments. Place snow or ice in a manner to prevent resource damage.

204.07 Subexcavation. Excavate material to the limits designated by the CO. Take cross-sections according to Section 152. Prevent unsuitable material from becoming mixed with the backfill. Dispose of unsuitable material according to Subsection 204.14. Backfill the subexcavation with topping, or other suitable material. Compact the material according to Subsection 204.11.

204.08 Borrow Excavation. Use all suitable roadway excavation in embankment construction. Do not use borrow excavation when it results in excess roadway excavation. Deduct excess borrow excavation from the appropriate borrow excavation quantity.

Obtain borrow source acceptance according to Subsection 105.02. Develop and restore borrow sources according to Subsection 105.03. Do not excavate beyond the established limits. When applicable, shape the borrow source to permit accurate measurements when excavation is complete.

204.09 Preparing Foundation for Embankment Construction. Prepare foundation for embankment construction as follows:

(a) Embankment less than 4 feet high over natural ground. When designated, remove topsoil and break up the ground surface to a minimum depth of 6 inches by plowing or scarifying. Compact the ground surface according to Subsection 204.11.

(b) Embankments over an existing asphalt, concrete, or gravel road surface. Scarify gravel roads to a minimum depth of 6 inches. Scarify or pulverize asphalt and concrete roads to 6 inches below the pavement. Reduce all particles to a maximum size of 6 inches and produce a uniform material. Compact the surface according to Subsection 204.11.

(c) Embankment across ground not capable of supporting equipment. Dump successive loads of embankment material in a uniformly distributed layer to construct the lower portion of the embankment. Limit the layer thickness to the minimum depth necessary to support the equipment.

(d) Embankment on an existing slope steeper than 1V:3H. Cut horizontal benches in the existing slope to a sufficient width to accommodate placement and compaction operations and equipment. Bench the slope as the embankment is placed and compacted in layers. Begin each bench at the intersection of the original ground and the vertical cut of the previous bench.

204.10 Embankment Construction. Incorporate only suitable roadway excavation material into the embankment. When the supply of suitable roadway excavation is exhausted, furnish unclassified borrow to complete the embankment. Obtain written approval before beginning construction of embankments over 6 feet high at subgrade centerline. Construct embankments as follows:

(a) General. At the end of each day's operations, shape to drain and compact the embankment surface to a uniform cross-section. Eliminate all ruts and low spots that could hold water.

During all stages of construction, route and distribute hauling and leveling equipment over the width and length of each layer of material.

Compact embankment side slopes flatter than 1V:1.75H with a tamping type roller or by walking with a dozer. For slopes 1V:1.75H or steeper, compact the slopes as construction of the embankment progresses.

Where placing embankment on one side of abutments, wing walls, piers, or culvert headwalls, compact the material using methods that prevent excessive pressure against the structure.

Where placing embankment material on both sides of a concrete wall or box structure, conduct operations so compacted embankment material is at the same elevation on both sides of the structure.

Where structural pilings are placed in embankment locations, limit the maximum particle size to 4 inches.

(b) Embankment within the roadway prism. Place embankment material in horizontal layers not exceeding 12 inches in compacted thickness. Incorporate oversize boulders or rock fragments into the 12-inch layers by reducing them in size or placing them individually as required by (c) below. Compact each layer according to Subsection 204.11 before placing the next layer.

Material composed predominately of boulders or rock fragments too large for 12-inch layers may be placed in layers up to 24 inches thick. Incorporate oversize boulders or rock fragments into the 24-inch layer by reducing them in size or placing them individually according to (c) below. Place sufficient earth and smaller rocks to fill the voids. Compact each layer according to Subsection 204.11 before placing the next layer.

(c) Individual rock fragments and boulders. Place individual rock fragments and boulders greater than 24 inches in diameter as follows:

(1) Reduce rock to less than 48 inches in the largest dimension.

(2) Distribute rock within the embankment to prevent nesting.

(3) Place layers of embankment material around each rock to a depth not greater than that permitted by (b) above. Fill all the voids between rocks.

(4) Compact each layer according to Subsection 204.11 before placing the next layer.

(d) Embankment outside of roadway prism. Where placing embankment outside the staked roadway prism, place material in horizontal layers not exceeding 24 inches in compacted thickness. Compact each layer according to Subsection 204.11.

204.11 Compaction. Compact the embankment using one of the following methods as specified:

(a) Compaction A. Use AASHTO T 27 to determine the amount of material retained on a Number 4 sieve. If there is more than 80 percent retained on the No. 4 sieve use procedure (1). If there is 50 to 80 percent retained on the No. 4 sieve use procedure (2). If there is less than 50 percent retained on the No. 4 sieve use procedure (3).

(1) Adjust the moisture content to a level suitable for compaction. Fill the interstices around rock with earth or other fine material as practical. Use compression-type rollers at speeds less than 6feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width with one of the following and until there is no visible evidence of further consolidation.

(a) Four roller passes of a vibratory roller having a minimum dynamic force of 40,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

(b) Eight roller passes of a 20-ton compression-type roller.

(c) Eight roller passes of a vibratory roller having a minimum dynamic force of 30,000 pounds impact per vibration and a minimum frequency of 1000 vibrations per minute.

Increase the compactive effort for layers deeper than 12 inches as follows:

- For each additional 6 inches or fraction thereof, increase the number of roller passes in (a) above by four passes.
- For each additional 6 inches or fraction thereof, increase the number of roller passes in (b) and (c) above, by eight passes.

(2) Use AASHTO T 99 to determine the optimum moisture content of the portion of the material passing a No. 4 sieve. Multiply this number by the percentage of material passing a No. 4 sieve, and add 2 percent to determine the optimum moisture content of the material. Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type rollers at speeds less than 6 feet per second and vibratory rollers at speeds less than 3 feet per second. Compact each layer of material full width according to (1) above.

(3) Classify the material according to AASHTO M 145. For material classified A-1 or A-2-4, determine the maximum density according to AASHTO T 180, method D. For other material classifications, determine the optimum moisture content and maximum density according to AASHTO T 99, method C.

Adjust the moisture content of material classified A-1 through A-5 to a moisture content suitable for compaction. Adjust the moisture content of material classified A-6 and A-7 to within 2 percent of the optimum moisture content.

Use compression-type or vibratory rollers. Compact each layer of material full width to at least 95 percent of the maximum density. Determine the in-place density and moisture content according to AASHTO T 310 or other approved test procedures. When required, use AASHTO T 224 to correct for coarse particles.

(b) Compaction B. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until there is no visible evidence of further consolidation or, if when a sheepsfoot roller is used, the roller "walks out" of the layer. Make at least three complete passes.

(c) Compaction C. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each embankment layer before placing the next layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Construct a solid embankment with adequate compaction by working smaller rock and fines in with the larger rocks to fill the voids, and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

204.12 Ditches. Slope, grade, and shape ditches. Remove all projecting roots, stumps, rock, or similar matter. Maintain all ditches in an open condition and free from leaves, sticks, and other debris.

Form furrow ditches by plowing or using other acceptable methods to produce a continuous furrow. Place all excavated material on the downhill side so the bottom of the ditch is approximately 18 inches below the crest of the loose material. Clean the ditch using a hand shovel, ditcher, or other suitable method. Shape to provide drainage without overflow.

204.13 Sloping, Shaping, and Finishing. Complete slopes, ditches, culverts, riprap, and other underground minor structures before placing aggregate courses. Slope, shape, and finish as follows:

(a) Sloping. Leave all earth slopes with uniform roughened surfaces, except as described in (b) below, with no noticeable break as viewed from the road. Except in solid rock, round tops and bottoms of all slopes including the slopes of drainage ditches. Round material overlaying solid rock to the extent practical. Scale all rock slopes. Slope rounding is not required on tolerance class D though M roads.

If a slide or slipout occurs on a cut or embankment slope, remove or replace the material, and repair or restore all damage to the work. Bench or key the slope to stabilize the slide. Reshape the cut or embankment slope to an acceptable condition.

(b) Stepped slopes. Where required by the contract, construct steps on slopes of 1⅓V:1H to 1V:2H. Construct the steps approximately 18 inches high. Blend the steps into natural ground at the end of the cut. If the slope contains nonrippable rock outcrops, blend steps into the rock. Remove loose material found in transitional area. Except for removing large rocks that may fall, scaling stepped slopes is not required.

(c) Shaping. Shape the subgrade to a smooth surface and to the cross-section required. Shape slopes to gradually transition into slope adjustments without noticeable breaks. At the ends of cuts and at intersections of cuts and embankments, adjust slopes in the horizontal and vertical planes to blend into each other or into the natural ground.

(d) Finishing. Finish the roadbed to be smooth and uniform, and shaped to conform to the typical sections. Remove unsuitable material from the roadbed and replace it with suitable material. Finish roadbeds to the tolerance class shown in table 204-2.Ensure that the subgrade is visibly moist during shaping and dressing. Scarify to 6 inches below the bottom of low sections, holes, cracks, or depressions and bring back to grade with suitable material. Maintain proper ditch drainage.

For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed.

For unsurfaced roads, use one of the following methods to finish the roadbed:

(1) Method A. Remove all material larger than 6 inches from the top 6 inches of the roadbed and replace with suitable material.

(2) Method B. Use a vibratory grid roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until there is no visible evidence of further consolidation.

(3) Method C. For roads designated as Construction Tolerance Class K, L, or M, finish the roadbed by spreading the excavation. Eliminate rock berms.

204.14 Disposal of Unsuitable or Excess Material. Dispose of unsuitable or excess material at designated sites or legally off of the project.

When there is a pay item for waste, shape and compact the waste material in its final location. Do not mix clearing or other material not subject to payment with the waste material.

204.15 Acceptance. See Table 204-1 for sampling and testing requirements.

Material for embankment and conserved topsoil will be evaluated under Subsections 106.02 and 106.04.

Excavation and embankment construction will be evaluated under Subsections 106.02 and 106.04.

Clearing and removal of obstructions will be evaluated under Sections 201 and 203.

Measurement

204.16 Measure the Section 204 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

(a) Roadway excavation. Measure roadway excavation in its original position as follows:

(1) Include the following volumes in roadway excavation:

(a) Roadway prism excavation;

(b) Rock material excavated and removed from below subgrade in cut sections;

(c) Unsuitable material below subgrade and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;

(d) Ditches, except furrow ditches measured under a separate bid item;

(e Topsoil;

(f) Borrow material used in the work when a pay item for borrow is not shown in the bid schedule;

(g) Loose scattered rocks removed and placed as required within the roadway;

(h) Conserved material taken from stockpiles and used in Section 204 work; and

(i) Slide and slipout material not attributable to the Contractor's method of operation.

(2) Do not include the following in roadway excavation:

(a) Overburden and other spoil material from borrow sources;

(b) Overbreakage from the backslope in rock excavation;

(c) Water or other liquid material;
(d) Material used for purposes other than required;
(e) Roadbed material scarified in place and not removed;
(f) Material excavated when stepping cut slopes;
(g) Material excavated when rounding cut slopes;
(h) Preparing foundations for embankment construction;
(i) Material excavated when benching for embankments;
(j) Slide or slipout material attributable to the Contractor's method of operation;
(k) Conserved material taken from stockpiles constructed at the option of the Contractor; and
(l) Material excavated outside the established slope limits.

(3) When both roadway excavation and embankment construction pay items are shown in the bid schedule, measure the following as roadway excavation only:
(a) Unsuitable material below subgrade in cuts and unsuitable material beneath embankment areas when a pay item for subexcavation is not shown in the bid schedule;
(b) Slide and slipout material not attributable to the Contractor's method of operations; and
(c) Drainage ditches, channel changes, and diversion ditches.

(b) Unclassified borrow, select borrow, and select topping. When measuring by the cubic yard measure in its original position. If borrow excavation is measured by the cubic yard in place, take initial cross-sections of the ground surface after stripping overburden. Upon completion of excavation and after the borrow source waste material is returned to the source, retake cross-sections before replacing the overburden. Do not measure borrow excavation used in place of excess roadway excavation.

(c) Embankment construction. Measure embankment construction in its final position. Do not make deductions from the embankment construction quantity for the volume of minor structures.

(1) Include the following volumes in embankment construction:
(a) Roadway embankments;
(b) Material used to backfill subexcavated areas, holes, pits, and other depressions;
(c) Material used to restore obliterated roadbeds to original contours; and
(d) Material used for dikes, ramps, mounds, and berms.

(2) Do not include the following in embankment construction:
(a) Preparing foundations for embankment construction;
(b) Adjustments for subsidence or settlement of the embankment or of the foundation on which the embankment is placed; and
(c) Material used to round fill slopes.

(d) Rounding cut slopes. Measure rounding cut slopes horizontally along the centerline of the roadway if a pay item for slope rounding is included in the bid schedule. If a pay item for slope rounding is not included in the bid schedule slope rounding will be considered subsidiary to excavation.

(e) Waste. Measure waste by the cubic yard in its final position. Take initial cross-sections of the ground surface after stripping over burden. Upon completion of the waste placement, retake cross-sections before replacing overburden.

(f) Slope scaling. Measure slope scaling by the cubic yard in the hauling vehicle.

Payment

204.17 The accepted quantities will be paid at the contract price per unit of measurement for the Section 204 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 204-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Topping (704.05) & unclassified borrow (704.06)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Processed material before incorporating in work	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D[(1)] or T 99, method C[(1)]	1 per soil type but not less than 1 per 13,000 yd^3	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd^2 but not less than 1 per layer	In-place	—	Before placing next layer
Select borrow (704.07 & Select topping (704.08)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type but not less than 1 for each day of production	Processed material before incorporating in work	Yes, when requested	Before using in work
		Gradation	—	AASHTO T 27 & T 11	"	"	"	"
		Liquid limit	—	AASHTO T 89	"	"	"	"
		Moisture-density	—	AASHTO T 180, method D[(1)] or T 99, method C[(1)]	1 per soil type but not less than 1 per 13,000 yd^3	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 6000 yd^2 but not less than 1 per layer	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor

Table 204-1 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Earth embankment (204.11, Compaction A)	Measured and tested for conformance (106.04)	Classification	—	AASHTO M 145	1 per soil type	Source of Material	Yes, when requested	Before using in work
		Moisture-density	—	AASHTO T 180, method D(1) or T 99, method C(1)	1 per soil type but not less than 1 per 13,000 yd^3	"	"	"
		Compaction	—	AASHTO T 310 or other approved procedures	1 per 3500 yd^2 but not less than 1 per layer	In-place	—	Before placing next layer
Top of subgrade (204.11 Compaction A)	Measured and tested for conformance (106.04)	Compaction	—	AASHTO T 310 or other approved procedures	1 per 2500 yd^2	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor.

Table 204-2
Construction Tolerances

	Tolerance Class [a]												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Roadbed width (ft)	+0.5	+0.5	+1.0	+1.0	+1.0	+1.0	+1.5	+1.0	+2.0	+2.0	+2.0	+2.0	+2.0
Subgrade elevation (ft)	±0.1	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±2.0	±3.0	±2.0	±3.0	(c)
Centerline alignment (ft)	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±1.5	±2.0	±3.0	±3.0	±5.0	(c)
Slopes, excavation, and embankment (% slope[b])	±3	±5	±5	±5	±5	±5	±10	±10	±10	±10	±20	±20	±20

(a) Maximum allowable deviation from construction stakes and drawings.
(b) Maximum allowable deviation from staked slope measured from slope stakes or hinge points.
(c) Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of

204.04_0605_us_06_12_2007

Deletes stone removal

Delete from the second sentence "stones 2 inches in diameter and larger,".

204.05_nat_us_02_18_2005

Deletes "Conservation of Topsoil". CONSERVATION OF TOPSOIL IS REQUIRED UNLESS THIS FSSS IS INCLUDED

204.05 Conserved Topsoil

Delete the entire paragraph.

204.06_nat_us_03_02_2005

Include in all contracts with FP-204: requires retrieval of material outside of construction limits resulting from contractor operations

204.06 Roadway Excavation

(a) General.

Add the following:

Retrieve material deposited outside of the clearing limits as directed by the CO. Place unsuitable material in designated areas.

204.06_nat_us_03_02_2005

Pioneer Roads -- use in all contracts with FP-204

204.06 Roadway Excavation.

Add the following:

d) Pioneer Roads. Road pioneering, slash disposal, and grubbing of stumps may proceed concurrently with excavation. Conduct excavation and placement operations so material to be treated under Section 201 will not be incorporated into the roadway unless specified in the slash treatment method. Maintain drainage during pioneering operations.

Remove snow and ice in advance of the work and deposit beyond the roadway limits in a manner that will not waste material or generate sediment. Do not incorporate snow and ice into embankments. Place snow or ice in a manner to prevent resource damage.

204.09_nat_us_03_02_2005

Include in all contracts with FP-204 -- deletes requirement of topsoil conservation

204.09 Preparing Foundation for Embankment Construction.

Delete subsection (a) and replace it with the following:

(a) Embankment less than 4 feet high over natural ground. When designated, remove topsoil and break up the ground surface to a minimum depth of 6 inches by plowing or scarifying. Compact the ground surface according to Subsection 204.11.

204.10_nat_us_03_02_2005

Include in all contracts with FP-204. Requires written approval prior to beginning construction on fills over 6ft. at centerlineand deletes overbuilding fills

204.10 Embankment Construction.

Add the following:

Obtain written approval before beginning construction of embankments over 6 feet high at subgrade centerline.

(a) General.

Delete the third paragraph and add the following:

Compact embankment side slopes flatter than 1V:1.75H with a tamping type roller or by walking with a dozer. For slopes 1V:1.75H or steeper, compact the slopes as construction of the embankment progresses.

204.11_nat_us_04_11_2005

Adds FS compaction methods. Use in all contracts with FP-204

204.11 Compaction.

Delete the first paragraph and replace it with the following:

For compaction according to method (a), (b), or (c), use AASHTO T 27 to determine the amount of material retained on a Number. 4 sieve. For compaction methods (d) or (e) no sieve test is required.

Add the following compaction methods:

(d) Layer Placement Method (Hauling and Spreading Equipment). Place material by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each embankment layer before placing the next layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Construct a solid embankment with adequate compaction by working smaller rock and fines in with the larger rocks to fill the voids, and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

(e) Layer Placement (Roller Compaction) Method. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until visible deformation of the layer ceases or, in when a sheepsfoot roller is used, the roller "walks out" of the layer. Make at least three complete passes.

204.13_nat_us_03_02_2005

Use in all contracts with FP-204. Adds FS roadbed finishing and tolerance classes

204.13 Sloping, Shaping, and Finishing.

Delete section (d) and add the following:

(d) Finishing. For surfaced roads, remove all material larger than 6 inches from the top 6 inches of the roadbed. For all roads, finish the roadbed to be smooth and uniform, and shaped to conform to the typical sections. Remove unsuitable material from the roadbed and replace it with suitable material. Finish roadbeds to the tolerance class shown in table 204-2.

Ensure that the subgrade for both surfaced and unsurfaced roads is visibly moist during shaping and dressing. Scarify to 6 inches below the bottom of low sections, holes, cracks, or depressions and bring back to grade with suitable material. Maintain proper ditch drainage.

For unsurfaced roads, use one of the following methods to finish the roadbed:

(1) Method A. Remove all material larger than 6 inches from the top 6 inches of the roadbed and replace with suitable material.

(2) Method B. Use a vibratory grid roller or approved equal with a minimum weight of 10 tons. Roll at least 5 full-width passes or until visible displacement ceases.

(3) Method C. For roads designated as Construction Tolerance Class K, L, or M, finish the roadbed by spreading the excavation. Eliminate rock berms.

Add Table 204-2—Construction Tolerances:

Table 204-2 Construction tolerances.

	Tolerance Class[a]												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Roadbed width (ft)	+0.5	+0.5	+1.0	+1.0	+1.0	+1.0	+1.5	+1.0	+2.0	+2.0	+2.0	+2.0	+2.0
Subgrade elevation (ft)	±0.1	±0.2	±0.2	±0.5	+0.5	±1.0	±1.0	±1.5	±2.0	±3.0	±2.0	±3.0	(c)
Centerline alignment (ft)	±0.2	±0.2	±0.5	±0.5	±1.0	±1.0	±1.5	±1.5	±2.0	±3.0	±3.0	±5.0	(c)
Slopes, excavation, and embankment (% slope[b]	±3	±5	±5	±5	±5	±5	±10	±10	±10	±10	±20	±20	±20

a. Maximum allowable deviation from construction stakes and drawings.

b. Maximum allowable deviation from staked slope measured from slope stakes or hinge points.

c. Unless otherwise shown the centerline alignment and subgrade elevation, as built, have no horizontal curves with a radius of less than 80 feet, and no vertical curves with a curve length of less than 80 feet when the algebraic difference in the grade change is less than 10 percent, or a curve length of less than 100 feet when the algebraic difference of the grade change is greater than or equal to 10 percent. The centerline grade is not to exceed 20 percent in 100 feet of length.

204.13_nat_us_03_02_2005

use in all contracts with FP-204. Deletes Slope rounding for FS tolerance classes

204.13 Sloping, Shaping, and Finishing.

(a) Sloping.

Add the following:

Slope rounding is not required on tolerance class D though M roads.

204.14_nat_us_03_02_2005

Use in all contracts with FP-204. Includes language for designated disposal sites.

204.14 Disposal of Unsuitable or Excess Material.

Delete the text of the first paragraph and substitute the following:

Dispose of unsuitable or excess material at designated sites or legally off of the project.

204.15_nat_us_02_07_2007

Include in all contracts with FP-204. Adds FS conditions for Table 204-1 for Sampling and Testing

204.15 Acceptance

Table 204-1 Sampling and Testing Requirements.

Add the following note to the table:

(2) When compaction methods (d) or (e) are used AASHTO M 145, T 99, T 180, and T 310 are not required for earth embankment test methods.

209.10_nat_us_10_23_2007

Include in all contracts with 602 Culverts and Drains

209.10 Backfill.

(a) General.

Add the following:

Replace any pipe that is distorted by more than 5 percent of nominal dimensions, or that is ruptured or broken.

Do not place or backfill pipe that meets any of the following conditions until the excavation and foundation have been approved in writing by the CO:

- Embankment height greater than 6 feet at subgrade centerline.
- Installation in a protected streamcourse.
- Round pipe with a diameter of 48 inches or greater.
- Pipe arches with a span of 50 inches or greater.
- Any box culvert of structure other than pipe culverts.

(b) Pipe culverts.

(1) Pipe culverts with compacted backfill.

Add the following:

Excavate an area on each side of the pipe as needed to effectively achieve compaction requirements. Backfill without damaging or displacing the pipe. Complete backfilling of the trench with suitable material.

209.11_nat_us_02_24_2005

Include in all contracts with 602 Culverts and Drains

209.11 Compacting.

Delete the subsection and add the following:

Compact backfill using designated compaction method A, B, or C:

Method A. Ensure that backfill density exceeds the density of the surrounding embankment.

Method B. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact each layer using appropriate compaction equipment until visual displacement ceases. For compaction under sections 252, 254, 255, 257, 258 and 262 compact with a vibratory steel wheeled roller with a mass of at least 8 tons.

Method C. Determine optimum moisture content and maximum density according to AASHTO T 99 method C. Adjust the moisture content of the backfill material to a moisture content suitable for compaction. Compact material placed in all layers to at least 95 percent of the maximum density. Determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

Table 209-1 Sampling and Testing Requirements

Add the following:

(2) Compaction methods (A) and (B) do not require AASHTO T-99 or T-310 test methods for foundation fill.

230 - Roadside Brushing

Does not exist in FP. Fill blanks in 230.02, 230.03 and 230.05

Description

230.01 Work. This work consists of removing all vegetative material including limbs, residual slash, live roadside brush, and small trees within the brushing limits designated on the plans. Brushing areas include turnouts.

Construction

230.02 Brushing. Cut all brush and small trees (6 inches diameter, or less, at the point of cut) inside the brushing limits and outside the roadbed no higher than 4 inches above ground level (6 inches for machine brushing). If rocks or other obstructions are encountered, cut no higher than 6 inches above the obstruction. Limb live trees with a diameter larger than 6 inches to provide a clear height of 14 feet above the road surface.

Cut all brush and trees located on the roadbed as nearly flush to the road surface as possible so stumps will not become a hazard to vehicle tires.

230.03 Windfalls. Limb windfalls lying within or across the brushing limits, cut off at the top of the existing cut slope or 5 feet from the shoulder on the fill slope. Dispose of windfall material as slash.

230.04 Road Junctions. Do not deposit brushing debris on the roadway of adjoining roads.

230.05 Slash Treatment. Scatter slash outside the brushing limits without damaging residual trees. Slash is defined as any material that has a length greater than 36 inches or a diameter greater than 3 inches at any point. Do not deposit material in streams, streambeds, culvert inlets or outlets, drainage ways, or cattle guards.

230.06 Acceptance. Roadside brushing will be evaluated under Subsection 106.02.

Measurement

230.07 Method. Measure the Section 230 items listed in the bid schedule according to Subsection 109.02 and the following.

Linear measurements will be horizontal along the road centerline.

Quantities will be the number of miles (or stations) and fractions thereof along the road centerline.

Payment

230.08. The accepted quantities will be paid at the contract price per unit of measurement for the section 230 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this section. See Subsection 109.05.

251 - Riprap

251.03_nat_us_06_18_2007

Includes subsections 03,08; for use on bridge and culvert projects with riprap

Construction Requirements

251.03 General.

Add the following:

Place riprap under or adjacent to structures before placing prefabricated superstructure units or constructing superstructure falsework unless otherwise approved by the CO.

251.08 Measurement.

Add the following:

Payment for excavation and embankment required for placement of riprap is indirectly included in the pay item for riprap.

303 - Road Reconditioning

303.00_0605_us_05_11_2007

Complete replacement, makes appropriate for Timber Sales contracts.

Delete Section 303 in its entirety and replace with the following.

Description

303.01 This work consists of reconditioning ditches, shoulders, roadbeds, parking areas, approach road intersections, cattleguards, asphalt surfaces and aggregate surfaces. Clean and maintain all drainage structures.

Material

303.02 Conform to the following Subsection:

Water 725.01

Construction Requirements

303.03 Ditch Reconditioning. Remove all slide material, sediment, vegetation, and other debris from the existing ditches and culvert inlets and outlets. Reshape ditches and culvert inlets and outlets to achieve positive drainage and a uniform ditch width, depth, and grade. Dispose of waste as shown on the plans.

303.04 Shoulder Reconditioning. Repair soft and unstable areas according to Subsection 204.07. Remove all slide material, vegetation, and other debris from existing shoulders including shoulders of parking areas, turnouts, and other widened areas. Dispose of waste as shown on the plans.

303.05 Roadbed Reconditioning Repair soft and unstable areas according to Subsection 204.07. Remove all organic, deleterious material larger than 6 inches from the top 6 inches of subgrade. Dispose of waste as shown on the plans. Scarify and shape the traveled way and shoulders at locations and to the depth and width designated on the plans. Remove surface irregularities and shape to provide a uniform surface.

Dispose of rock larger than 4 inches brought to the surface during scarification in areas designated on the plans.

For portions of roads not requiring scarification, the roadbed may contain rocks larger than 4 inches provided they do not extend above the finished roadbed surface. Reduce in place or remove rock extending above the finished roadbed surface. Dispose of removed rock in areas designated on the plans.

Compact using the following method as specified:

(a) Layer Placement Method (Hauling and Spreading Equipment). Place material by end dumping to the minimum depth needed for operation of spreading equipment. Level and smooth each embankment layer before placing the next layers. Operate hauling and spreading equipment uniformly over the full width of each layer. Construct a solid embankment with adequate compaction by working smaller rock and fines in with the larger rocks to fill the voids, and by operating hauling and spreading equipment uniformly over the full width of each layer as the embankment is constructed.

(b) Layer Placement (Roller Compaction) Method. Place material by end dumping to the minimum depth needed for operation of spreading equipment. Adjust the moisture content of the material to obtain a mass that will not visibly deflect under the load of the hauling and spreading equipment. Operate compaction equipment over the full width of each layer until visible deformation of the layer ceases or, in when a sheepsfoot roller is used, the roller "walks out" of the layer. Make at least three complete passes. . Use rollers that meet the following requirements:

(1) Steel wheeled rollers, other than vibratory, capable of exerting a force of not less than 250 pounds per inch of width of the compression roll or rolls.
(2) Vibratory steel wheeled rollers equipped with amplitude and frequency controls with a minimum weight of 6 tons, specifically designed to compact the material on which it is used.
(3) Pneumatic-tired rollers with smooth tread tires of equal size that will provide a uniform compacting pressure for the full width of the roller and capable of exerting a ground pressure of at least 80 psi.

303.06 Aggregate Surface Reconditioning. Repair soft and unstable areas to the full depth of the aggregate surface and according to Subsection 204.07. Scarify to the depth and width shown on the plans, and remove surface irregularities. Reshape, finish, and compact the entire aggregate surface according to Section 301, Section 308, Section 321, or Section 322 as applicable.

303.07 Roadway Reconditioning. Perform all the applicable work described in Subsections 303.03 through 303.06.

Maintain the existing cross slope or crown unless otherwise shown on the plans. Establish a blading pattern that will retain the surfacing on the roadbed and provide a through mixing of the materials within the completed surface width.

Blade and shape the subgrade for both surfaced and unsurfaced roads when moisture content is suitable for compaction.

303.08 Pulverizing. Scarify the surface to the designated depth and width. Pulverize all material to a size one and one half times the maximum sized aggregate or to 1½ inches, whichever is greater. Mix, spread, compact, and finish the material according to Section 322.

303.09 Acceptance. Road reconditioning work will be evaluated under Subsections 106.02 and 106.04.

Measurement

303.10 Measure the Section 303 items listed in the Schedule of Items according to Subsection 109.02 and the following as applicable.

Measure ditch reconditioning and shoulder reconditioning by the mile, by the station or foot horizontally along the centerline of the roadway for each side of the roadway.

Measure roadbed reconditioning, aggregate surface reconditioning, roadway reconditioning, and pulverizing by the mile, by the station, or by the square yard.

Payment

303.11 The accepted quantities will be paid at the contract price per unit of measurement for the Section 303 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

322 - Minor Aggregate Courses

322.00_nat_us_10_24_2007

A stand-alone modification of 301 - does not include additives, use with FSSS 703.05. Subsection 322.04 modified 11/1/05.

Description

322.01 This work consists of constructing one or more courses of aggregate on a prepared surface. Work includes producing aggregate by grid rolling, screening, or crushing methods, or placing pit-run or Government-furnished aggregate.

Surface aggregate grading is designated as shown in Table 703-3.

Subbase and base aggregate grading is designated as shown in Table 703-2.

Screened aggregate grading is designated as shown in Table 703-16.

Material

322.02 Conform to the following Subsections:

Aggregate	703.05
Water	725.01

Construction Requirements

322.03 General. Prepare the surface on which the aggregate course is placed according to Section 204 or 303 as applicable.

Request approval of the roadbed in writing before placing aggregate.

Develop, haul, and apply water in accordance to Section 170.

Submit target values within the gradation ranges shown in Table 703-2 or 703-3 for the required grading. After reviewing the proposed target values the CO will determine the final values for the gradation and notify the Contractor in writing.

No quality requirements or gradation other than maximum size will be required for pit run and grid-rolled material. For grid rolling, use all suitable material that can be reduced to maximum size.

After processing on the road, remove all oversize material from the road and dispose of it as directed by the CO.

If the aggregate is produced and stockpiled before placement, handle and stockpiled according to Section 320. Establish stockpile sites at approved locations.

322.04 Mixing and Spreading. Mix the aggregate and adjust the moisture content to obtain a uniform mixture with a moisture content suitable for the specified compaction method. Spread and shape the mixture on the prepared surface in a uniform layer with no segregation of size, and to a loose depth that will provide the required compacted thickness.

Do not place in layers exceeding 6 inches in compacted thickness for aggregate base and surface courses or twice the maximum particle size for screened aggregate. When more than one layer is necessary, compact each layer according to Subsection 322.05 before placing the next layer. Route hauling and leveling equipment uniformly over the full width.

When placing aggregate over geotextile, place aggregate in a single lift to the full depth specified.

322.05 Compacting. Compact each layer full width. Roll from the sides to the center, parallel to the centerline of the road. Along curbs, headers, walls, and all places not accessible to the roller, compact the material with approved tampers or compactors.

Compact the aggregate using one of the following methods as specified:

Compaction A. Operating spreading and hauling equipment over the full width of the travelway.

Compaction B. Operate rollers and compact as specified in Subsection 204.11(a)(1).

Compaction C. Moisten or dry the aggregate to a uniform moisture content between 5 and 7 percent based on total dry weight of the mixture. Operate rollers and compact as specified in Subsection 204.11(a)(1).

Compaction D. Compact to a density of at least 95 percent of the maximum density, as determined by AASHTO T 99, method C or D.

Compaction E. Compact to a density of at least 96 percent of the maximum density, as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

Compaction F. Compact to a density of at least 95 per-cent of the maximum density, as determined by AASHTO T 180, method C or D.

Compaction G. Compact to a density of at least 100 percent of the maximum density as determined by the Modified Marshall Hammer Compaction Method (available upon request from USDA Forest Service, Regional Materials Engineering Center, P.O. Box 7669, Missoula, MT 59807).

For all compaction methods, blade the surface of each layer during the compaction operations to remove irregularities and produce a smooth, even surface. When a density requirement is specified, determine the in place density and moisture content according to AASHTO T 310 or other approved test procedures.

322.06 Construction Tolerance. If grade finishing stakes are required, finish the surface to within ±0.10 feet from staked line and grade elevation.

If grade finishing stakes are not required, shape the surface to the required template and check the surface with a 10-foot straightedge. Defective areas are surface deviations in excess of 1/2 inch in 10 feet between any two contacts of the straightedge with the surface.

Correct all defective areas by loosening the material, adding or removing material, reshaping, and compacting.

Ensure that the compacted thickness is not consistently above or below the specified thickness. The maximum variation from the compacted specified thickness is ½ inch.

Ensure that the compacted width is not consistently above the specified width. The maximum variation from the specified width will not exceed +12 inches at any point.

322.07 Maintenance. Maintain the aggregate course to the correct line, grade, and cross-section by blading, watering, rolling, or any combination thereof until placement of the next course. Correct all defects according to Subsection 322.06.

322.08 Acceptance. See Table 322-1 or Table 322-2 as applicable, for sampling and testing requirements.

Aggregate gradation and surface course plasticity index will be evaluated under Subsection 106.04. If the aggregate is obtained from a Government stockpile then the above characteristics will be evaluated under Subsection 106.02. Other aggregate quality properties will be evaluated under Subsections 106.02 and 106.04. Placement of aggregate courses will be evaluated under Subsections 106.02 and 106.04.

The allowable upper and lower aggregate gradation limits are the Target Value plus or minus the allowable deviations shown in Tables 703-2 and 703-3.

The allowable upper and lower Plasticity index limits for surface courses are stated in 703.05(b).

Preparation of the surface on which the aggregate course is placed will be evaluated under Section 204 or 303 as applicable.

Measurement

322.09 Measure the Section 322 items listed in the bid schedule according to Subsection 109.02 and the following as applicable.

Measure square yard width horizontally to include the top of aggregate width including designed widening. Measure the square yard length horizontally along the centerline of the roadway.

If the measurement for aggregate is by cubic yard using contract quantities then measure aggregate by the cubic yard in-place once compacted, otherwise measurement for aggregate by the cubic yard is measured by the cubic yard in the hauling vehicle.

Measure thickness perpendicular to the grade of the travelway.

Measure width perpendicular to the centerline.

Payment

322.10 The accepted quantities will be paid at the contract price per unit of measurement for the Section 322 pay items listed in the bid schedule. Payment will be full compensation for the work prescribed in this Section. See Subsection 109.05.

Table 322-1
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Aggregate source quality 703.05	Measured and tested for conformance (106.04 & 105)	LA abrasion (coarse)	—	AASHTO T 96	1 per type & source of material	Source of material	Yes, when requested	Before using in work
		Sodium sulfate soundness loss (coarse & fine)	—	AASHTO T 104	"	"	"	"
		Durability index (coarse & fine)	—	AASHTO T 210	"	"	"	"
		Fractured faces	—	ASTM D 5821	"	"	"	"
Subbase, Base, and Surface courses	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

Table 322-1 (continued)
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Subbase, Base, and Surface	Measured and tested for conformance (106.04)	Moisture-density Method D	—	AASHTO T 99 (1)	1 per type and source of material	Source of material	Yes, when requested	Before using in work
		Moisture-density Method E	—	R-1 Marshall	"	"	"	"
		Moisture-density Method F	—	AASHTO T 180(1)	"	"	"	"
		Moisture-density Method G	—	R-1 Marshall	"	"	"	"
		In-place density & moisture content	—	AASHTO T 310 or other approved procedures	3 per day	In-place	—	Before placing next layer

(1) Minimum of 5 points per proctor.

Table 322-2
Sampling and Testing Requirements

Material or Product	Type of Acceptance (Subsection)	Characteristic	Category	Test Methods Specifications	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Screened Aggregate	Measured and tested for conformance (106.04)	Sample	—	AASHTO T 2	2 per day	From windrow or roadbed after processing or from approved crusher sampling device	Yes	48 hours

602 - Culverts and Drains

602.03_nat_us_09_06_2005

Include with all contracts using Section 602.

602.03 General.

Add the following:

Ensure that the final installed alignment of all pipe allows no reverse grades, and does not permit horizontal and vertical alignments to vary from a straight line drawn from center of inlet to center of outlet by more than 2 percent of pipe center length or 1.0 feet, whichever is less.

602.06_nat_us_07_03_2007

Include when plastic pipe is permitted or required. Adds the word "bell" to clarify soil-tight joints.

602.06 Laying Plastic Pipe.

Delete the second paragraph and substitute the following:

Provide soil-tight bell and spigot joints for plastic pipe culverts.

607 - Cleaning, Reconditioning, and Repairing Existing Drainage Structures

607.06_01_us_10_12_2006

607.06 Reconditioning Drainage Structures.

Add the following:

Repair all culverts designated to be cut by removal of the damaged sections and furnish all material required to replace damaged pipe and joints.

625 - Turf Establishment

625.03_nat_us_02_25_2005

Include in all contracts with Section 625.

625.03 General.

Delete the first subsection and add the following:

Apply turf establishment to finished slopes and ditches within 14 Days upon completion of work at any specific worksite. Do not seed during windy weather or when the ground is excessively wet, frozen, snow covered, extremely dry, cloddy, hard pan, or is otherwise untillable.

625.04_0605_us_04_13_2007

deletes stone removal requirement

625.04 Preparing Seedbed.

Delete from the second sentence "stones 2 inches in diameter and larger,"

625.05_nat_us_03_30_2005

Include in contracts to DELETE WATERING REQUIREMENT.

625.05 Watering.

Delete the entire subsection

625.07_0605_us_03_20_2008

Seed type & rate - Darrington R.D.

625.07 Seeding.

(a) Dry method. Delete the third sentence.

Add the following after subsection (b).

Furnish the kinds of seed and the amounts to be applied in terms of pure live seed as follows:

Kind of seed	Quantity of Pure Live Seed (Pounds/ Acre)
Deschampsia caespitosa, tufted hairgrass	4.0
Lolium multiflorum, annual ryegrass	10.0
Triticum aestivum x *Secale cereale*, winter triticale	60.0
Trifolium hybridum, alsike clover	2.0
Total	76.0

Obtain the pounds of seed to be furnished per acre by dividing the pounds of pure live seed (PLS) required per acre by the product of the percent purity & percent germination.

Example: (5 lbs. PLS/acre) = 6.55 lb.
(0.90 x 0.85) where purity = 90% and germination = 85%

703 - Aggregate

703.05_nat_us_12_07_2006

Use in all contracts with 703

Delete 703.05 and replace with the following:

703.05 Subbase, Base, Surface Course, and Screened Aggregate.

(a) Subbase or base aggregate. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-2
(2) Liquid limit, AASHTO T 89	25 max.
(3) Plastic limit, AASHTO T 90	Nonplastic
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	50% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

(b) Surface course aggregate. Furnish hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel conforming the following:

(1) Gradation	Table 703-3
(2) Liquid limit, AASHTO T 89	35 max.
(3) Plastic Index, AASHTO T 90	
a) If the percent passing the No. 200 sieve is less than 12%	2 to 9
b) If the percent passing the No. 200 sieve is greater than 12%	Less than 2
(4) Los Angeles abrasion, AASHTO T 96	40% max.
(5) Sodium sulfate soundness loss (5 cycles), AASHTO T 104	12% max.
(6) Durability index (coarse), AASHTO T 210	35 min.
(7) Durability index (fine), AASHTO T 210	35 min.
(8) Fractured faces, ASTM D 5821	75% min.
(9) Free from organic matter and lumps or balls of clay	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Do not furnish material that contains asbestos fibers.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary. Fine aggregate, material passing the No. 4 sieve, shall consist of natural or crushed sand and fine mineral particles.

(c) Screened aggregate – Furnish hard, durable particles or fragments of stone, slag, or gravel conforming the following:

(1) Gradtion	Table 703-16
(2) Plastic Index, AASHTO T 90	Less than 9
(3) Los Angeles abrasion, AASHTO T 96	55% max.
(4) Free from organic matter and lumps or balls of clay.	

Do not use material that breaks up when alternately frozen and thawed or wetted and dried.

Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

Delete Table 703-2 and replace with the following:

Table 703-2
Target Value Ranges for Subbase and Base Gradation

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)				
	Grading Designation				
	A (Subbase)	B (Subbase)	C (Base)	D (Base)	E (Base)
2½ inch	100				
2 inch	97 – 100	100	100		
1½ inch		97 – 100			
1 inch	65 – 79 (6)		80 – 100 (6)	100	
3/4 inch			64 – 94 (6)	86 – 100 (6)	100
1/2 inch	45 – 59 (7)				
3/8 inch			40 – 69 (6)	51 – 82 (6)	62 – 90 (6)
No. 4	28 – 42 (6)	40 – 60 (8)	31 – 54 (6)	36 – 64 (6)	36 – 74 (6)
No. 40	9 – 17 (4)			12 – 26 (4)	12 – 26 (4)
No. 200	4.0 – 8.0 (3)	4.0 – 12.0 (4)	4.0 – 7.0 (3)	4.0 – 7.0 (3)	4.0 – 7.0 (3)

( ) The value in the parentheses is the allowable deviation (±) from the target values..

Delete Table 703-3 and replace with the following:

Table 703-3
Target Value Ranges for Surface Gradation

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)					
	Grading Designation					
	F	G	H	S	T	U
1 1/2 inch	100[c]			100		
1 inch	97-100	100		72 - 92 (6)	100	
3/4 inch	76-89 (6)	97 - 100	97 - 100			100
1/2 inch					71 – 91 (6)	
3/8 inch	56-68 (6)	70 – 80 (6)	80 – 92 (6)	51 – 71 (6)		71 – 90 (6)
No. 4	43-53 (7)	51 – 63 (7)	58 – 70 (7)	36 – 53 (7)	43 – 60 (7)	50 – 68 (7)
No. 8				26 – 40 (6)	30 – 46 (6)	34 – 51 (6)
No. 16	23-32 (6)	28 – 39 (6)	28 – 40 (6)			
No. 40	15-23 (5)	19 – 27 (5)	16 – 26 (5)	14 – 25 (5)	16 – 28 (5)	19 – 30 (5)
No. 200	10.0-16.0 (4)	10.0 – 16.0 (4)	9.0 – 14.0 (4)	8.0 – 15.0 (4)	8.0 – 15.0 (4)	8.0 – 15.0 (4)

( ) The value in the parentheses is the allowable deviation (±) from the target values.
If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

Add Table 703-16:

Table 703-16

Gradation Requirements for Screened Aggregate

Sieve Size	Percent by Mass Passing Designated Sieve (AASHTO T 27 and T 11)						
	Grading Designation						
	L	M	N	O	P	Q	R
6 inch	100	100					
4 inch			100	100			
3 inch					100	100	
2 inch							100
No. 4		15-45		15-45		15-45	

705.02_nat_us_04_13_2007 Provides intermediate gradation class 4a and larger gradations class 7 & 8

705.02 Riprap Rock.

Delete Table 705-1 and replace it with the following:

Gradation Requirements for Riprap

Class	Percent of Rock by Mass	Mass (pounds)	Approximate Cubic Dimension [b,c] (inches)
1	20	22 to 33	6 to 8
	30	11 to 22	5 to 6
	40	1.1 to 11	2 to 5
	10[a]	0 to 1.1	0 to 2
2	20	55 to 110	8 to 10
	30	22 to 55	6 to 8
	40	2.2 to 22	3 to 6
	10[a]	0 to 2.2	0 to 3
3	20	220 to 330	14 to 16
	30	110 to 220	10 to 14
	40	11 to 110	5 to10
	10[a]	0 to11	0 to 5
4	20	550 to 770	18 to 20
	30	220 to 570	14 to 18
	40	22 to 220	6 to 14
	10[a]	0 to 22	0 to 6
4a	20	770 to1353	20 to 24
	30	330 to 770	16 to 20
	40	33 to 330	7 to16
	10[a]	0 to 33	0 to 7
5	20	1540 to 2200	26 to 28
	30	770 to 1540	20 to 26
	40	55 to 1100	8 to 20
	10[a]	0 to 55	0 to 8
6	20	1870 to 3520	28 to 34
	30	1100 to 1870	22 to 28
	40	110 to 1100	10 to 22
	10[a]	0 to 110	0 to 10
7	20	4400 to 5940	35 to 39
	30	2200 to 4400	28 to 35
	40	220 to 2200	14 to 28
	10[a]	0 to 220	0 to 14
8	20	7000 to 10000	42 to 47
	30	4000 to 7000	35 to 42
	40	400 to 4000	16 to 35
	10[a]	0 to 400	0 to 16

(a) Furnish spall and rock fragments graded to provide a stable dense mass. The volume of a rock with these cubic dimensions has a mass approximately equal to the specified rock mass.

(b) Furnish rock with breadth and thickness at least one-third its length.

709 - Reinforcing Steel and Wire Rope

Includes subsections 01,02,03; for projects with rebar, wire cable, or prestressing strand.

709.01 Reinforcing Steel.

(b) Reinforcing bars.

Delete paragraph one and replace with the following:

Furnish deformed, grade 60 bars conforming to AASHTO M 31.

(d) Tie bars.

Delete paragraph one and replace with the following:

Furnish deformed, grade 60 bars conforming to AASHTO M 31.

(e) Hook bolts.

Delete paragraph one and replace with the following:

Furnish plain, grade 60 bars conforming to AASHTO M 31 with M14 rolled threads or M16 cut threads. Furnish a threaded sleeve nut capable of sustaining a minimum axial load of 15,000 pounds.

709.02 Wire Rope Or Wire Cable.

Delete paragraph one and replace with the following:

Furnish wire rope or wire cable, and associated fittings, conforming to AASHTO M 30. Furnish 0.75 inch diameter Type II wire rope, with Class C zinc coating, unless otherwise shown on the plans.

709.03 Prestressing Steel.

Delete all to subsection (a) and replace with the following:

Fabricate from one of the following:

- Seven-wire uncoated strand conforming to AASHTO M 203, Grade 270, Supplement I, low relaxation strand, minimum ultimate tensile strength 270 ksi, unless shown otherwise on the plans.

- Epoxy coated seven-wire strand, ASTM A 882, Grade 270, low relaxation strand, minimum ultimate tensile strength 270 ksi, unless shown otherwise on the plans.

- High tensile strength wire, AASHTO M 204, Type BA or WA, Supplement I (low relaxation), unless shown otherwise on the plans.

- High strength steel bars, AASHTO M 275M, Type II, minimum ultimate tensile strength 150 ksi, unless shown otherwise on the plans.

713 - Roadside Improvement Material

713.05_nat_us_03_02_2005

Include in all contracts requiring mulch. Addresses weed prevention

713.05 Mulch.

Add the following:

Assure that mulch used on the project is certified noxious weed free by the appropriate authority in the jurisdiction of use.

718 - Traffic Signing and Marking Material

718.02_nat_us_03_02_2005

Include in all contracts with 718.

718.02 Reserved.

Replace this section with the following:

718.02 Protective Overlay Film and Edge Film.

Protective overlay film will be a high performance flouropolymer film such as 3M Scotchlite Premium Protective Overlay Film Series 1160 or approved equal.

Edge film will be a pressure-sensitive, premium-quality, clear, ultraviolet-resistant, 3 inches wide vinyl film.

718.05_nat_us_02_25_2008

Required in all contracts -- deletes the use of chromate for preparation of aluminum sign blanks

718.05 Aluminum Panels

Delete the third paragraph and replace with the following:

Clean, degrease and properly prepare the panels according to methods recommended by the sheeting manufacturer. Conversion coatings will conform to ASTM B-921 or ASTM B-449.

T-811 BLADING (10/07)

811.01 Description

This work consists of surface blading the traveled way to a condition that facilitates traffic and provides proper drainage. Blading includes shaping the crown or slope of travel way, berms, and drainage dips in accordance with this specification. Compaction is required when shown on the ROAD LISTING.

811.02 Maintenance Requirements

A. Timing - Perform surface blading during the contract period as often as needed to provide conditions stated for the maintenance level of the road.

B. General

1. Blade and shape the existing traveled way and shoulders, including turnouts , to produce a surface which is uniform, consistent to grade, and crowned or cross-sloped as indicated by the character of the existing surface, unless otherwise shown in the ROAD LISTING, to at least ½ inch per 1 foot of width, but not more than ¾ inch per 1 foot of width. Thoroughly loosen surfacing material to no less than 2 inches depth or the depth of potholes or corrugations. Scarification to facilitate cutting to the full depth of potholes or corrugations may be elected, but will be considered incidental to blading. Do not scarify to a depth that will cause contamination of the surfacing.

2. Apply water during blading when sufficient moisture is not present to prevent segregation. Supply, haul, and apply water in accordance with Section T-891.

3. Shape existing native rock or aggregate surfaced drainage dips to divert surface runoff to existing outlet devices, ditches, or discharge locations.

4. Establish a blading pattern which provides a uniform driving surface, retains the surfacing on the roadbed, and provides a thorough mixing of the materials within the completed surface width. Upon final blading, no disturbed rock shall protrude more than 2 inches above the adjacent surface unless otherwise provided in the contract. Remove and place outside the roadbed, material not meeting this dimension so as not to obstruct drainage ways or structures. This material may be scattered off the roadbed if there is free drainage.

5. Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
To be filled in by local FS invasive plant specialist, if applicable.

C. Routine Blading

1. Conform to the dimensions SHOWN ON THE DRAWINGS or designated in the SUPPLEMENTAL SPECIFICATIONS upon completion of blading.

2. Shape roadbed width in excess of the dimensions shown only as needed to provide drainage away from the traveled way. Do not remove established grasses and other vegetation from the excess width except as incidental to providing drainage or unless otherwise provided in the contract.

D. Compaction

Roads requiring compaction will be included in the ROAD LISTING. Unless Compaction Method B is designated in the ROAD LISTING, all traveled ways requiring compaction may be compacted by Method A. Compaction shall commence immediately following blading.

Compaction methods are:

Compaction Method A: Breaking track while operating equipment on the traveled way.

Compaction Method B: 7-10 ton pneumatic, steel, or equivalent vibratory roller, operated to cover the full width two (2) times.

E. Undercutting - Undercutting roadway back slope is not permitted.

F. Intersections

1. At intersections, blade the roadbeds of side roads which are not closed or restricted from vehicular use to ensure smooth transitions.

2. Signing, cross ditching in the road surface (traveled way), earth berms, or other devices placed to discourage or eliminate use by passenger cars, are field evidence of road closure or restriction. Roads listed for work under Sections T-835, T-836, T-838, or T-839 are considered restricted.

3. Side roads listed for work under this Section are not restricted.

G. Cleaning of Structures - Do not allow materials resulting from work under this Section to remain on or in structures, such as bridges, culverts, cattle guards, or drainage dips.

H. Berms - Maintain existing berms to the condition of adjacent segments. Do not create new berms.

I. Smooth Blading - Smooth blading may be used as an interim measure to remove loose surfacing material from the wheel paths, and store removed materials in a recoverable windrow, until blade processing as described in this section is feasible. Watering will not be required for smooth blading. Accomplish smooth blading without distorting the existing cross-slope or crown of the traveled way.

Move and store loose surfacing materials on the high side of super-elevated curves and sections with uniform inslope or outslope. In crowned sections, store the material on either or both sides as elected. Windrow and place stored materials to provide not less than 12 feet of smooth traveled way on one-lane segments, or 20 feet of smooth traveled way on two-lane segments, or segments with turnouts. Cut holes through windrows, which may collect water on the road, for drainage at least every 500 feet.

T-813 SURFACING (10/07)

813.01 Description

This work consists of placing surface aggregate as DESIGNATED ON THE GROUND, or as ordered by the Contracting Officer. It includes preparing the area, furnishing, hauling, and placing all necessary materials and other work necessary to blend with the adjacent road cross section.

813.02 Materials

A. Materials will be Government-furnished when stated in the supplemental specifications.

B. Materials furnished by the Purchaser shall conform to the gradation and quality requirements of Section 703 of the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-03 U.S. Customary Units" and FS supplements to the FP-03.

C. All materials transported onto National Forest System land shall be free of invasive species of concern. Written documentation of methods used to determine the invasive species of concern free status of any and all materials furnished by the Purchaser shall be submitted to the Contracting Officer before transport of any materials onto National Forest System land.

The Contracting Officer shall have 5 days, excluding weekends and Federal holidays, to review the methods and inspect the materials after the required written documentation is provided by the Purchaser. After satisfactory review and inspection or after such 5 day period, the Purchaser may transport the material onto National Forest System land.

Material or methods appropriate for establishing invasive species of concern free status for the particular invasive species of concern are listed below.

Invasive Species of Concern and Acceptable Methods specific to this project:

Invasive Species of Concern	**Acceptable Methods**
To be filled in by the local FS invasive plant specialist	*To be filled in by the local FS invasive plant specialist*

813.03 Maintenance Requirements

A. Thoroughly loosen the area to be surfaced to a minimum depth of 1 inch prior to placement of aggregate.

B. Mixing and Placing

When scheduled coincidentally with work under Section T-811, and included in the SUPPLEMENTAL SPECIFICATIONS, mix surfacing and existing aggregate with water until a uniform mixture is obtained prior to final shaping and compaction.

Otherwise, spread the material on the prepared area in layers no more than 4 inches in depth. When more than one (1) layer is required, shape and compact each layer before the succeeding layer is placed. Upon completion, the surfacing shall reasonably conform to the adjacent cross section and provide smooth transitions in the road profile.

C. Compaction Methods

Compaction Method A: Breaking track while operating equipment on the traveled way.

Compaction Method B: 7-10 ton pneumatic, steel, or equivalent vibratory roller, operated to cover the full width two (2) times.

Either Method A or B may be used unless Method B is designated in the ROAD LISTING.

T-831 DITCH MAINTENANCE (10/07)

831.01 Description

This Section provides for routine maintenance of various types of ditches to provide a waterway which is unobstructed, as shown on the ROAD LISTING or DESIGNATED ON THE GROUND.

831.02 Maintenance Requirements

A. Maintain ditches by removing rock, soil, wood, and other materials. Maintained ditches shall function to meet the intent of the original design.

B. Undercutting backslopes during removal operations is not permitted.

C. Suitable material up to 4 inches in greatest dimension removed from the ditches may be blended into existing native road surface and shoulder or placed in designated berm.

D. Do not blend material from ditch cleaning operations into aggregate surfaced roads. Do not blade material across aggregate or bituminous surfaced roads, unless approved in writing by the Contracting Officer.

E. Haul material in excess of 831.02 D or subject to 831.02 E to a designated waste area under Section T-832. Remove excess materials temporarily stored on the ditch slope or edge of the shoulder daily.

F. Remove limbs and wood chunks in excess of 12 inches in length or 3 inches in diameter from ditches and place outside the roadway.

G. Clean paved surfaces of all materials resulting from ditch maintenance work.

H. Shape lead-off ditches to drain away from the traveled way.

I. Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
To be filled in by local FS invasive plant specialist, if applicable.

T-832 REMOVE AND END HAUL MATERIALS (05/07)

832.01 Description

Work consists of loading, hauling, and placing of slide, slough, or excess materials such as rock, soil, vegetation, and other materials to designated disposal sites.

832.02 Maintenance Requirements

A. Remove, end haul, and dispose of excess materials generated by work under other Sections of this contract.

B. Remove the slide and slough materials in the area extending approximately 6 feet vertically above the road surface and not more than 3 feet down slope from the roadbed. Dispose of material at designated sites as SHOWN ON THE DRAWINGS, identified in SUPPLEMENTAL SPECIFICATIONS, or as ordered by the Contracting Officer.

Reshape the slope which generated the slide material as nearly as practical to its original condition by equipment operating from road surface. Reshaping of roadside ditches in slide area shall be in accordance with Section T-831.

C. When approved by the Contracting Officer, fill slumps by compacting selected materials into roadway depressions. Compaction is by Method 2.

D. Place all materials in disposal sites as specified in the SUPPLEMENTAL SPECIFICATIONS, as SHOWN ON THE DRAWINGS, or as ordered by the Contracting Officer.

1. Method 1 - Side Casting and End Dumping. Material may be placed by side casting and end dumping. Where materials include large rocks, provide a solid fill by working smaller pieces and fines into voids. Shape the finished surfaces to drain.

2. Method 2 Layer Placement - Step or roughen surfaces on which materials are to be placed prior to placing any material. Place materials in approximately horizontal layers no more than 12 inches thick. Compact each layer by operating hauling and spreading equipment over the full width of each layer.

E. Repair any damage to existing aggregate or pavement surfaces.

T-834 DRAINAGE STRUCTURE MAINTENANCE (10/07)

834.01 Description

This work consists of cleaning and reconditioning culverts and other drainage structures.

834.02 Maintenance Requirements

A. Clean drainage structures, inlet structures, culverts, catch basins, and outlet channels specified in the SUPPLEMENTAL SPECIFICATIONS. Clean catch basins by removing the material within the area SHOWN ON THE DRAWINGS.

B. Clean the transition from the ditch line to the catch basin a distance of 10 feet from the catch basin. Clean outlet channels and lead-off ditches a distance of 6 feet. Remove and place debris and vegetation so as to not enter the channel or ditch, or obstruct traffic. Haul debris and vegetation to a designated disposal area in accordance with Section T-832.

C. Hydraulic flushing of drainage structures is not allowed unless provided for in the SUPPLEMENTAL SPECIFICATIONS.

D. Cleaning and reconditioning are limited to the first 3 feet of inlet and outlet, determined along the top of the structure. Recondition culvert inlet and outlet by field methods such as jacking out or cutting away damaged metal which obstructs flow. Treat cut edges with a zinc rich coating, in accordance with AASHTO M 36M and ASTM A 849.

E. Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
To be filled in by local FS invasive plant specialist, if applicable.

T-842 CUTTING ROADWAY VEGETATION (10/07)

842.01 Description

This work consists of cutting all vegetative growth, including trees and other vegetation less than 4 inches in diameter measured 6 inches above the ground, on roadway surfaces and roadsides.

842.02 Maintenance Requirements

A. General

1. Cut brush, trees, and other vegetation within each area treated to a maximum height of 6 inches above the ground surface or obstruction such as rocks or existing stumps. When work is performed under this Section, remove all limbs which extend into the treated area, or over the roadbed, to a height of 14 feet above the traveled way surface elevation.

2. Items to remain will be DESIGNATED ON THE GROUND.

3. Work may be performed either by hand or mechanically unless specifically shown in the Road Listing. Self-propelled equipment is not allowed on cut and fill slopes or in ditches.

4. Correct damage to trunks of standing trees caused by Purchaser's operation either by treatment with a commercial nursery sealer or by removing the tree as directed by the Contracting Officer.

5. Limb trees within the cutting limits which are over 4 inches -measured at 6 inches above the ground in lieu of cutting.

6. When trees are limbed, cut limbs within 4 inches of the trunk.

B. Cutting Side Vegetation

1. Show the width of vegetation to be removed in the Road Listing.

2. Unless otherwise included in the SUPPLEMENTAL SPECIFICATIONS or DESIGNATED ON THE GROUND:

a. Commence work at the edge of the traveled way and proceed away from the road centerline.

b. Roads without a defined traveled way: The starting point for cutting will be marked on the ground or defined in the SUPPLEMENTAL SPECIFICATIONS.

3. The points for establishing cutting limits are as follows:

a. Fill and daylighted (wide roadbed) section cutting commences at the edge of the traveled way and proceeds away from the road center line.

b. Drainage ditched section cutting commences at the bottom of the existing ditch and proceeds away from the road center line. Cutting on ditch foreslopes is not required.

c. Unditched cut section cutting commences at the intersection of the cutbank and the roadbed and proceeds away from center line.

4. Provide transitions between differing increments of cutting width. Accomplish transitions in a taper length of not less than 50 feet nor more than 70 feet.

C. Debris

1. Materials resulting from the cutting operation in excess of 12 inches in length or 3 inches in diameter is not allowed to remain on roadway slopes within the treated area, in ditches, or within water courses.

2. Remove limbs and chunks in excess of 3 inches in any dimension from the traveled way and shoulders.

3. Materials may be scattered down slope from the roadbed, outside of the work area and drainages unless otherwise listed in D. Invasive Species of Concern.

D. Invasive Species of Concern

Where DESIGNATED ON THE GROUND, included in the ROAD LISTING, SHOWN ON THE DRAWINGS or as ordered by the Contracting Officer invasive species of concern prevention practices shall be followed as listed below.

Invasive Species of Concern Prevention Practices
To be filled in by local FS invasive plant specialist, if applicable.

T-851 LOGGING OUT (5/07)

851.01 Description

This work consists of removal of fallen trees and snags which encroach into the roadway or the 3 feet of roadside abutting the roadway on the cut side.

851.02 Maintenance Requirements

A. Limb and remove timber which meets Utilization Standards, or deck at locations designated by the Contracting Officer.

B. Limb other material cut into lengths for handling. Deck outside ditches and drainages, off the traveled way and turnouts or at staked locations. The clearing width is to the edge of the roadway for public use roads, except limited use roads. The clearing width for limited use roads is shown in the specifications.

C. Notwithstanding B(T)2.3, blowdown timber outside Sale Area required to be removed, which meets Utilization Standards in A(T)2, when designated by the Contracting Officer is Included Timber subject to requirements of B(T)2.2.

D. Do not leave woody debris and slash in excess of 12 inches in length or 3 inches in diameter, or concentrations which may plug ditches or culverts, in ditches, drainage channels, or on backslopes, traveled way, shoulders, or turnouts.